Control Number: 51878

Item Number: 25

Addendum StartPage: 0

REPORTS OF THE ELECTRIC	§ PUBLIC UTILITY COMMISSION
RELIABILITY COUNCIL OF TEXAS	§
FOR CALENDAR YEAR 2021	§ OF TEXAS

ERCOT'S 2020 ANNUAL REPORT

Electric Reliability Council of Texas, Inc. (ERCOT) submits this 2020 Annual Report, which comprises the attachments listed in the table below.

Document Description	Attachments	Page No.
A strategic plan, including a statement of the mission and vision of the organization, a summary of the industry environment in which it operates, a description of the major challenges it faces, and key strategies it intends to employ to perform its functions and meet its challenges.	A	4
A long-term organizational plan including:		
(i) An overview of the major systems, including both hardware and software, operated by ERCOT, including descriptions of the functionality provided, estimates of remaining useful life, estimates of ongoing maintenance and upgrade costs, and evaluations of the performance of each system;	B1	15
(ii) A description of major capital projects completed in the prior budget year and those expected to be completed in the following budget year, including an explanation of why each project is needed to assist ERCOT in meeting its responsibilities or the benefits it would provide to market participants or consumers;	B2	18
(iii) A schedule summarizing ERCOT's sources and uses of funds for a six-year period beginning with the last historic calendar year and projections for the next five calendar years;	B3	23
(iv) Long-term goals for all ERCOT activities (See also Attachment A); and	B4	25
(v) An evaluation of ERCOT's performance in meeting its responsibilities and system expectations during the current budget year.	B5	35

Financial information including:		
(i) A copy of an independent audit of ERCOT's financial statements for the report year. ERCOT will supplement this filing when the independent audit is completed.[1]	C1	-
(ii) A schedule comparing actual revenues and costs to budgeted revenues and costs for the report year, a schedule showing the variance between actual and budgeted revenues and costs, and a schedule showing the assets and liabilities (including level and types of debt);	C2	37
(iii) The annual board-approved budget; and	C3	39
(iv) A description of any derivative transactions entered into by ERCOT. ERCOT has not been party to any derivative transactions for a number of years.		

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[1] See Project No. 51878 Reports of the Electric Reliability Council of Texas for Calendar Year 2021, Item No. 22 on the PUC interchange, *Notice of Electric Reliability Council of Texas, Inc. Regarding Corporate Governance Status in Relation to 2020 Audited Financial Statements Report and 2022-2023 Biennial Budget Request.*

Respectfully submitted,

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ATTORNEYS FOR ELECTRIC
RELIABILITY COUNCIL OF TEXAS, INC.

Attachment A

ERCOT 2019-2023 Strategic Plan

Strategic Plan
2019-2023

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One of the most important things an organization can work on is its strategy. Developing strategy requires an enterprise to look beyond its current operations and consider developments that may alter what it takes to successfully operate in the future. Strategy looks for threats and opportunities and formulates ways to meet them successfully.

ERCOT develops our strategy by looking ahead in five-year increments. There is no magic in this particular time period, but a five-year period does require us to think far enough into the future to consider potential technological, economic and policy changes. Some changes beyond the horizon may soon shape ERCOT's ability to deliver its mission of serving the public by ensuring a reliable grid, efficient electricity markets, open access and retail choice. Planning ahead in this way is essential to ERCOT leading with independent insight amidst the many changes impacting electricity markets and technology.

As our 2019-2023 Strategic Plan highlights, ERCOT is prepared to maintain excellent operations and to improve and modernize our business processes as necessary to meet emerging challenges. The plan sets a course for building on the success of the ERCOT system and for providing employees with the tools they need to achieve strategic objectives in every part of the ERCOT enterprise.

This plan was developed by numerous ERCOT stakeholders: the ERCOT Board of Directors, representatives of our Market Segments, ERCOT executive management and a Strategic Planning Team comprised of ERCOT employees.

ERCOT employees provided feedback and helped identify key issues facing the company's future. I appreciate the efforts of all those who participated, in particular our Enterprise Risk Management & Strategic Analysis team, who provided leadership throughout the process.

The main point of defining strategy is to direct action that will move the strategy forward. With a well-considered strategy in place for 2019-2023, ERCOT's job moving forward is to establish strategic priorities, align our efforts to those priorities and execute successfully to deliver on our critical public service mission.

Sincerely,

Bill Magness
President and CEO

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About ERCOT

Founded in 1970, the Electric Reliability Council of Texas (ERCOT) is an independent, not-for-profit organization responsible for overseeing the reliable and safe transmission of electricity over the power grid serving most of Texas.

As the Independent System Operator (ISO) since 1996, ERCOT has been the broker between competitive wholesale power buyers and sellers. In 1999, the Texas Legislature restructured the Texas electric market by unbundling the investor-owned utilities and creating retail customer choice in those areas. ERCOT was assigned four primary responsibilities:

- System reliability – planning and operations

- Wholesale market settlement for electricity production and delivery

- Retail registration process for customer choice

- Open access to transmission

ERCOT provided the platform upon which Texas' electric utility industry made the transition to retail competition on January 1, 2002. Today, ERCOT manages the flow of electric power to more than 25 million Texas customers – representing about 90 percent of the state's electric load As the ISO for the region, ERCOT schedules power on an electric grid that connects more than 46,500 miles of transmission lines and 600+ generation units. It also performs financial settlement for the competitive wholesale bulk-power market and administers retail switching for 7 million premises in competitive choice areas.

ERCOT is a membership-based 501(c)(4) nonprofit corporation, governed by a 16-member Board of Directors and subject to oversight by the Public Utility Commission of Texas (PUC) and the Texas Legislature. Its members include consumers, cooperatives, generators, power marketers, retail electric providers, investor-owned electric utilities, transmission and distribution providers and municipally-owned electric utilities.

How ERCOT is funded

The PUC has authorized ERCOT to charge the ERCOT System Administration Fee to fund its budget. ERCOT converts the fee into a charge to each Qualified Scheduling Entity using the formula set forth in the ERCOT Protocols, which is based on actual volume consumption of electricity. ERCOT submits a biennial budget to its Board, and ultimately, the PUC for final approval. The 2018-2019 budget maintained the System Administration Fee at 55.5 cents per MWh (no increase from the 2016-2017 budget). ERCOT anticipates maintaining a flat System Administration Fee through 2024, and as a result, management and staff remain dedicated to seeking opportunities to improve operational efficiency, as well as continue cost-management initiatives that have enabled the ISO to postpone or minimize fee increases in spite of additional costs associated with the increasingly complex electric market.

ERCOT executives established direction

Vision: Lead with independent insight on the future of electricity reliability, markets and technology in Texas in order to facilitate grid and market change for the benefit of all stakeholders.

Mission: We serve the public by ensuring a reliable grid, efficient electricity markets, open access and retail choice.

Key areas of focus:
- People
- Grid
- Technology
- Market

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Preparing the Strategic Plan

ERCOT leadership is focused on continuing to develop an organization (people and systems) that can quickly adapt to provide value to those we serve.

ERCOT utilized a traditional strategic planning process involving its Board, stakeholders and employees.

Focusing on ERCOT, Inc. – the company

Maintaining a culture of compliance and of corporate citizenship

Establishing a structure to evaluate future initiatives and determine priorities

The framework to develop this plan included:

Enabling a line of sight from the plan to employee goals

Being clear and concise

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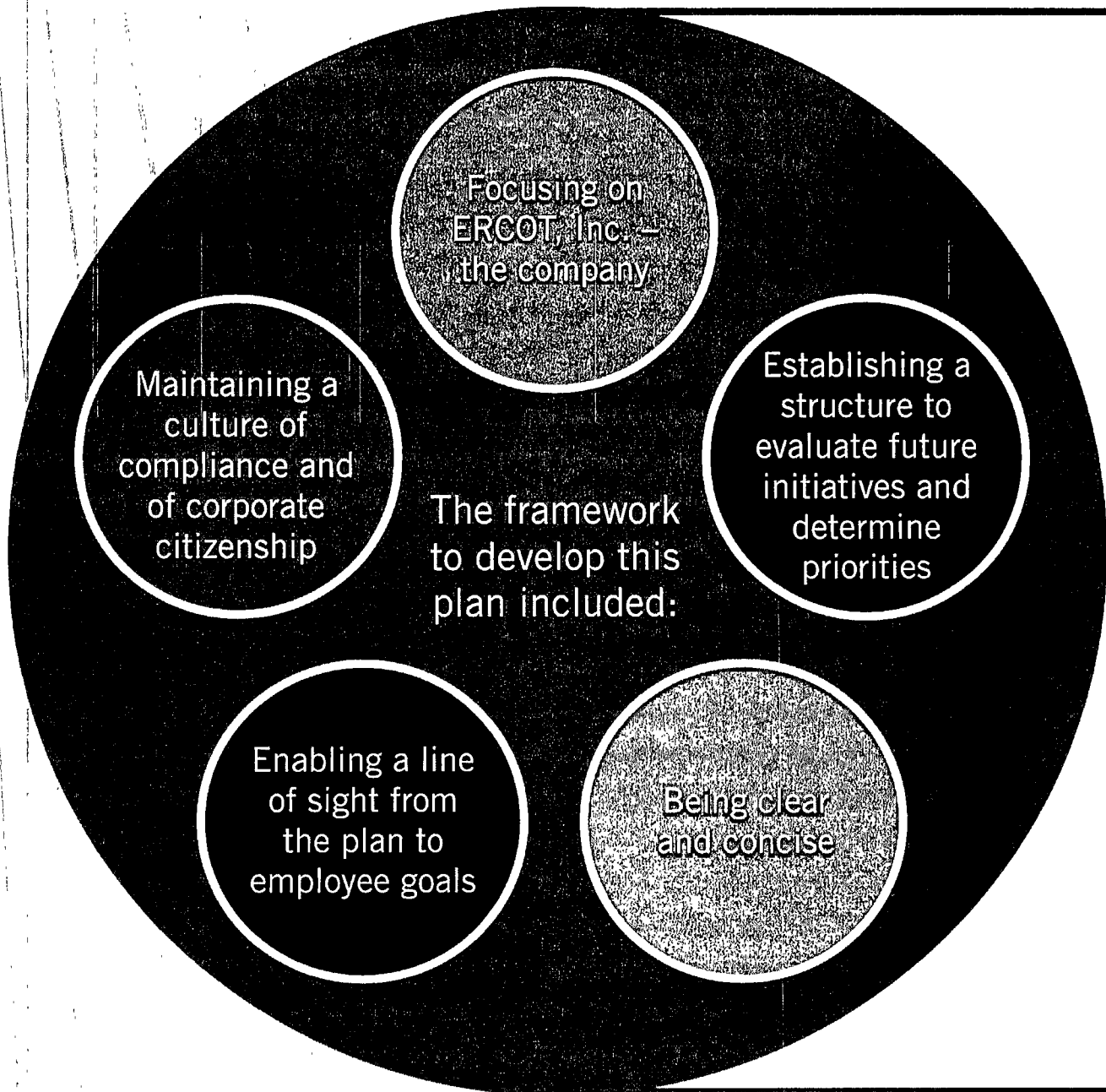
Defining the strategy

ERCOT began developing its 2019-2023 Strategic Plan in early 2018. Executive leadership identified a Strategic Planning Team comprised of eight individuals representing various areas of the organization. This group was charged with leading the effort to define opportunities and challenges facing ERCOT, and to draft a strategic plan document for 2019-2023.

The planning team and executives engaged in training to establish a common language and approach for the process. Twenty working sessions were held to identify drivers and refine the most critical aspects used to shape ERCOT's strategies.

Staff was encouraged to provide feedback through the Strategic Planning Team, the CEO Focus Group and a strategic planning survey.

The ERCOT Board of Directors and stakeholders provided feedback through Board meetings and Market Segment review sessions.

The process was facilitated internally by ERCOT's Enterprise Risk Management and Strategic Analysis team.

ERCOT will continually review its strategy to quickly adapt to the rapidly changing environment in which it operates.

Mission and Objectives

Environmental Scanning

Strategy Formulation

Strategy Implementation

Evaluation and Control

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Key drivers that shape ERCOT's strategies

Grid modernization and complexity

The grid is changing dramatically and quickly, and becoming ever more complex. Grid modernization and the smart grid will play key roles in ERCOT's strategies to operate reliably. As grid technology changes, there is a greater need for improved modeling, monitoring and analytical tools.

Changing resource mix

ERCOT's resource mix continues to change as new technologies emerge. The economies of various technologies change relative to one another. Policies tailored to specific resource types are continually introduced or rolled off. These challenges require the ISO to proactively model these changes and anticipate reliability issues and market design implications associated with the changing resource mix.

Decreasing visibility and control

The integration of new resource technologies, distributed energy resources and other small energy resources complicate ERCOT's ability to have visibility into and control of the electric system. Although individually each is a small impact, the increasing lack of visibility on the aggregate creates a transmission-level reliability concern.

Collaborative interaction

The current technological methods of sharing information are not optimal in the long run. There is a need for effective and open collaboration and straightforward information exchange with Market Participants, regulators, industry, researchers and peers, in order to share expertise, expand learning opportunities and proactively plan for change.

Increasing number of electricity consumers and changing usage patterns

The population growth rate in Texas, coupled with increased consumer use of smart home technology and the electrification of the transportation sector are changing power usage patterns. With the emergence of new resource technologies, an understanding of how these trends will impact the transmission system and to what degree integration with the grid and wholesale markets is appropriate will prove essential.

Providing high-value services

ERCOT is tasked to responsibly use funds to provide high-value services and maintain reliability while rising to the challenges of an increasingly complex and changing industry. It is imperative to take a proactive, strategic approach to this to work. As the industry and workforce changes, ERCOT must identify the skill sets needed and implement efforts to attract and retain the right workforce to fulfill ERCOT's mission.

Cyber security and physical security vulnerabilities

The industry continues to see an increase in the sophistication and volume of cyber attacks. There is a constant need to protect physical and cyber assets. Increased vulnerabilities require ERCOT to continuously evaluate what additional steps are needed.

Balancing advanced technology and reliability

Improvements in technology, increasing amounts of data and quicker response times provide opportunities for improved analytical capabilities that are required to manage the grid reliably.

Minimizing reputational risk

ERCOT has the unique responsibility to manage the flow of electric power to Texas consumers, perform financial settlement for the competitive wholesale bulk-power market and administer the retail registration process in competitive choice areas. Since even minimal errors or issues outside of ERCOT's control can negatively impact external parties' impressions of the organization, ERCOT must continually nurture relationships while enforcing an internal culture of compliance, security and reliability.

Enhance operating capabilities

to maintain reliability of an increasingly complex system

To reliably operate the increasingly complex electric grid and markets, ERCOT must enhance its analytical capabilities and the resilience of its critical infrastructure and systems.

These enhancements will include:

1. Advancement of ERCOT's modeling, monitoring and analytical tools

2. Assimilation of evolving technologies into these tools and processes

3. Performance of more rigorous forward analyses and scrutiny of system events

Improve information exchange

to facilitate collaborative interaction

To improve information exchange, ERCOT will modernize business operations and data integration with stakeholders by enhancing the provision of data and reports and facilitating a more streamlined process for data submission to ERCOT, while maintaining security and confidentiality.

ERCOT will collaborate with Market Participants, regulators, industry, researchers and our peers to share expertise, expand learning opportunities and proactively plan for change

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Advance competitive solutions

for a changing industry

To support efficient electric markets, open access and retail choice, ERCOT will use its expertise to provide fact-based, objective analysis to policy and decision-makers to advance competitive solutions for an evolving industry

ERCOT will partner with stakeholders and industry experts to·

1. Facilitate entry and participation in markets by new and existing resource types

2. Continue to evolve the necessary Ancillary Services

3. Improve the reliable and efficient management of regional transmission constraints

4. Pursue opportunities to enhance the flexibility of ERCOT's systems to more readily accommodate such changes

Optimize use of ERCOT, Inc.'s resources

to continuously provide high-value services

To ensure the responsible use of the funds it is entrusted with while rising to the challenges of an increasingly complex and changing industry,

ERCOT will proactively drive strategic requirements to:

1. Optimize allocation of resources to strategic priorities

2. Leverage innovative and efficient solutions

3. Promote enterprise-wide thinking

4. Ensure staff has the knowledge, skills and abilities to match the evolving state of technology and the industry

5. Foster employee engagement and accountability

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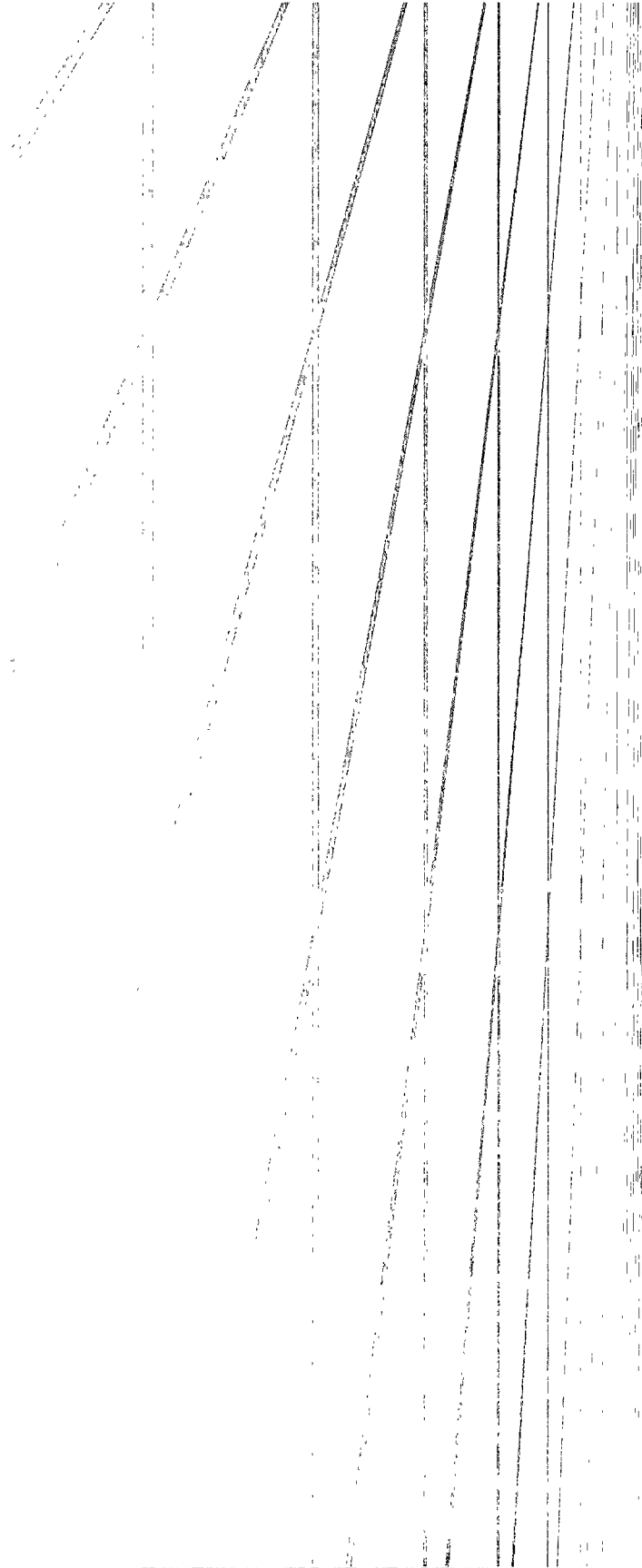
Attachment B1

Overview of ERCOT Major Systems

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	Functions Provided	Hardware Associated	Software Associated	Remaining Useful Life	Hardware/Software Maintenance Costs	Performance Overview	Planned Changes
Grid Operations							
Energy Management System	Grid Monitoring Control and Situational Awareness	Infrastructure consists of Dell/EMC Vxblock servers and IBM pSeries database servers Other Systems infrastructure consists of Flexpod (Cisco servers and NetApp storage) The systems are configured into a dual redundant (and site fail over) architecture	GE - Energy Management System Hitachi ABB - Outage Scheduler Siemens - Network Model Management System Market Information System PowerTech Labs - VSAT/TSAT Electric Power Group - PMU ITron - Load Forecast UL/Energy & Mateo - Wind Forecast MDAUS - Solar Forecast MDAUS - Weather Forecast, Aveva (OSI) - PI Historian OATI - etagging Mapbox Atlas - Grid visualization	2-3 Years	$3,698 000 annually	Systems have sufficient capacities to withstand future growth demands throughout remaining life Additional capacity will be required for EMS upgrade and Passport activities	EMS upgrade in planning phase, scheduled to go-live in CY2024 Hardware upgrades planned for 2021-2023 (DC5) Operating System, Database, and Integration system upgrades in 2021-2023
Market Operations							
Market Management System	Competitive wholesale market operations	Infrastructure consists of Dell/EMC Vxblock servers and IBM pSeries database/application servers Other Systems infrastructure consists of Flexpod (Cisco servers and NetApp storage) The systems are configured into a dual redundant (and site fail over) architecture	Hitachi ABB - Market Management System Hitachi ABB - Outage Scheduler Nexant iHedge - Congestion Revenue Rights Market Information System IBM - CPLEX optimization package TIBCO - Enterprise Messaging Potomac Economics - Independent Market Monitor	4-5 Years	$4 376,000 annually	Systems have sufficient capacities to withstand future growth demands throughout remaining life Additional capacity will be required for passport and upgrade activities	MMS/OS operating system database were upgraded in 2021 Additional hardware upgrades planned for 2021-2023 (DC5) Operating System, Database, and Integration system upgrades in 2021-2022
Retail Processing	Transaction processing for the deregulated retail market in Texas	Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	OpenText - NAESB TIBCO - EDI TIBCO - Messaging Siebel - Registration Serena - Flight Certification/Market Issue Management	3-5 Years (Software)	$3,139 000 annually	Systems are being upgraded with sufficient capacities to withstand known future growth demands	Software platform updates are underway through 2022 Hardware upgrades planned for 2021-2023 (DC5) Operating System, Database and Integration system are underway through 2022
Wholesale Settlements	Services to facilitate the accurate and timely accounting of the wholesale energy market transactions in ERCOT	Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	ERCOT - Settlements & Billing System Siebel - Registration Appworx - Orchestration TIBCO - Messaging ERCOT - CSI (Credit and Settlement) ERCOT - Credit Management & Monitoring Itron MV90 - Meter Data Management System ERCOT - Renewable Energy Credits	2-4 Years	$851,000 annually	Systems have been upgraded with sufficient capacities to withstand known future growth demands	Credit - Technology software upgrades and functional enhancements in 2023 Siebel - Technical upgrade in 2021 Hardware upgrades planned for 2021-2023 (DC5) Operating System Database and Integration system are underway through 2022
Information Operations							
Market Data Transparency	Reports data extracts, and data management activities for ERCOT stakeholders as required by protocol	Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	IBM Cognos - Business Intelligence SAS - Analytics Informatica - Data Extract, Transform, and Load AppWorx - Orchestration Oracle - Relational Database Management System	1-2 Years	$2,195,000 annually	Systems are upgraded on a regularly scheduled basis	Periodic application upgrades beginning late 2021-2022 Hardware upgrades planned for 2021-2023 (DC5)
Digital Content Management	ERCOT web content and communication channels both public and secure (ERCOT com/MIS/Mobile app)	Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	Highland Alfresco - Content Management/Process Management Crafter - Web Content Management	2-3 Years	$688 000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	ECMS project in flight through 2021 Upgrades to begin in 2022 Hardware upgrades planned for 2021-2023 (DC5)

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	Functions Provided	Hardware Associated	Software Associated	Remaining Useful Life	Hardware/Software Maintenance Costs	Performance Overview	Planned Changes
Integration Services	Internal and external integration and interfaces	Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	TIBCO - Enterprise Web Services	1-2 Years	$491 000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Scheduled upgrade forecasted in 2022 Hardware upgrades planned for 2021-2023 (DC5)
Enterprise Applications							
ERP	Financial, Supply Chain and Human Resources management	No ERCOT owned hardware because application is hosted with provider	Workday for HR Finance and Procurement functions, Zycus Contract Management System for Supply Chain Management	Perpetual	$1,136,000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Ongoing semi-annual vendor upgrades
Communication Collaboration	Email & Collaboration	Email is hosted with provider, Collaboration on Flexpod (Cisco servers and NetApp storage) and IBM pSeries database servers running AIX	MS Exchange Online SharePoint Portal Atlassian Suite Identity and Access Suite Office Suite Cisco WebEx Zoom	4-6 Years	$1,167,000 annually	Systems operating with sufficient capacities and are scheduled for technology refresh to extend capacity beyond 3 years	Microsoft Office 365 planned 2020-2023 Upgrade Identity and Access Suite in years 2 – 4 Hardware upgrades planned for 2021-2023 (DC5)
Shared File Services	Company data storage retrieval and sharing	Flexpod (Cisco servers and NetApp storage)	Microsoft Windows File Services	3-5 Years	$615 000 annually	Systems operating with sufficient capacities	Hardware upgrades planned for 2021-2023 (DC5)
Test Tools	Test automation Test Suite Development Defect Reporting	Flexpod (Cisco servers and NetApp storage) running Windows Server and Red Hat Enterprise Linux	HP Business Technology Optimization (BTO) software	4-6 Years	$615 000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Develop automation for test data setup and test script execution continuing in 2021 Hardware upgrades planned for 2021-2023 (DC5)
Storage Infrastructure							
Production	ERCOT's storage infrastructure houses all production level data within the enterprise	Dell/EMC VMAX storage for EMS systems and NetApp All Flash FAS for non-EMS systems	EMC PowerPath NetApp OnTAP	3-5 Years	$1 522,000 annually	Migration to flash storage will continue to provide ERCOT with the performance and availability needed to satisfy market demands internal production demands and future projects	Hardware upgrades planned for 2021-2023 (DC5)
Disaster Recovery	ERCOT incorporates a mirror replication of all production data able to withstand immediate RPO requirements This infrastructure is also used for bi-annual DR testing and service resumption plans	Dell/EMC VMAX storage for EMS systems and NetApp All Flash FAS for non-EMS systems	Database replication software (Oracle Data Guard & SQL Server Always On) and NetApp SnapMirror	3-5 Years	$626,000 annually	DR Infrastructure within storage are consistent with production levels of capacity and performance	Hardware upgrades planned for 2021-2023 (DC5)
Network Infrastructure							
Internet	Manage Internet connections to include Routing, DNS Content Filtering Environmental Security	Cisco Routers and Switches Palo Alto Firewalls, Citrix NetScaler Infoblox AT&T Spectrum and Data Foundry service providers	Cisco IOS Palo Alto PanOS	3+ Years	$367,000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Hardware upgrades planned for 2022-2024 (DC5)
WAN	Provide connectivity to ERCOT for Market Participants Environmental Security Digital Certificate Mgmt	Cisco Routers Sprint and AT&T service providers, Cisco ONS MSPP	Palo Alto Networks, Cisco IOS	2+ Years	$367,000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Telco vendors are migrating from Time Division Multiplex (TDM) to Ethernet which will require WAN upgrades at ERCOT and at MPs continuing in 2021
Production / EMMS	Load balancing web servers network connectivity to servers and environmental security	Cisco Routers and Switches Palo Alto Firewalls, Citrix NetScaler	Cisco IOS Palo Alto PanOS	3+ Years	$367 000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Hardware upgrades planned for 2022-2024 (DC5)
Corporate	Network connectivity of corporate servers and workstations, VPN connectivity and environmental security	Cisco VoIP Cisco Routers and Switches Palo Alto Firewalls and VPN Concentrators Citrix NetScaler	Cisco IOS Palo Alto PanOS, Palo Alto GlobalProtect Symantec Suite, Citrix RSA	3+ Years	$439,000 annually	Systems operating with sufficient capacities to withstand future growth demands throughout remaining life	Hardware upgrades planned for 2022-2024 (DC5)

Attachment B2

A description of major capital projects completed in the prior budget year and those expected to be completed in the following budget year, including an explanation of why each project is needed to assist ERCOT in meeting its responsibilities or the benefits it would provide to market participants or consumers.

ERCOT's Major Capital Projects

The major capital projects in the chart consist of projects with an approved total expenditure equal to or greater than $500,000 and were completed in the prior budget year or are expected to complete in the current budget year. Complete is defined as the project has gated to closed in its project lifecycle. The report contains an explanation of why each project is needed to assist ERCOT in meeting its responsibilities or the benefits it would provide to market participants or consumers. These projects were derived from ERCOT's Project Priority List (PPL) and are funded by ERCOT's approved base operating budget.

Criteria
For prior year projects (i.e. 2020)
1. must be major (i.e., total project expenditure >= $500,000), and
2. must be complete.
For the following year (i.e. current year 2021)
1. must be major (i.e., total project expenditure >= $500,000), and
2. must be "expected to be complete in this year."

Major ERCOT Capital Projects Completed in 2020					7
Project No. / **Project**	**Project Category**	**Budget Range**	**Summary Description**	**Benefit Summary**	**04/02/2021 Status**
193-01	PMU Tool Evaluation and Implementation	Business Strategy	$1 0M-$1 5M	Develop a Phasor Measurement Unit (PMU) technology which can be used in the control room for wide area grid visualization	Facilitate further grid model validation Once tool matures, it can be used to improve reliability through oscillation detection and alarming, generator model validation, and post-disturbance analysis and reporting	Complete
209-03	Study Network (STNET) Integration	Business Strategy	$1 0M-$1 5M	Develop and integrate EMS STNET results into the GridGeo platform, enabling ERCOT to configure grid conditions for study	Provide ERCOT Operations, Operations Support, and Operators the necessary STNET data integrations to load study information into the GridGeo and map applications for use in operations, operations planning, and outage coordination studies	Complete
239-01	Identity and Access Management	Technical Foundation	$6 0M-$8 0M	Replace current Identity Management system to update unsupported system, provide centralized repository for all identities, account lifecycle management, provisioning, de-provisioning, auditing, certification and monitoring	Improve efficiency and reduce risk throughout the user identity management lifecycle, simplify role management and access certification audits Ensure the right users have the right levels of access which will result in more efficient use of resources, faster responses and less effort for audit requests	Complete
245-01	2017 EPS Metering Enhancements	Efficiencies / Enhancements	$500k-$750k	The ERCOT-Polled Settlement (EPS) Metering Enhancements project will complete a list of known defects and desired enhancements, as well as automate selected test scripts	The effort will increase the efficiency of the Settlement Metering Team, ensure data presented in displays and reports reflects current information in the EPS database and enhance business continuity Automation of test scripts streamlines future quality assurance efforts	Complete
312-01	NPRR863 Fast Frequency Response Implementation	Business Strategy	$500k-$700k	NPRR863 Phase-1 modifies the EMS and MMS systems to allow generation resources capable of Fast Frequency Response (FFR) to provide FFR as a Responsive Reserve Service (RRS)	The new Ancillary Service (AS) framework per NPRR863 positions ERCOT to meet future reliability needs as the generation mix includes more inverter-based Intermittent Renewable generation Resources (IRR) The first changes of NPRR863 allows generation resources capable of FFR to provide frequency support as a portion of RRS after 1150 MW has been procured from generators capable of providing Primary Frequency Response (PFR) Including FFR as a subset of RRS allows ERCOT to meet the reliability objectives with lower quantities of RRS and also helps mitigate ERCOT's critical inertia	Complete
315-01	Tech Refresh - Business Intelligence	Technical Foundation	$400k-$600k	The Business Intelligence (BI) Tech Refresh project refreshes applications in the BI technology stack to ensure vendor support	The upgrade will provide features to enhance ERCOT's capability and usability such as better dashboarding, charting capabilities, improved scheduling performance and enhanced data modelling as well as enhanced new features for data access.	Complete
330-01	Tech Refresh - Remedy Service Desk Replacement	Technical Foundation	$1 20M-$1 60M	The approach is to have an established IT Service Management framework across ERCOT that emphasizes quality of service delivery & focuses on the relationship with the customer	Mitigate a technical health vulnerability by moving from Remedy, which is currently on a legacy version of the technology that is no longer supported to a platform based approach that will address a number of operational challenges that ERCOT faces today	Complete

Major ERCOT Capital Projects Expected to Complete in 2021						12
Project No.	Project	Project Category	Budget Range	Summary Description	Benefit Summary	04/02/2021 Status
209-05	Macomber Map Replacement for Control Room/OTS Integration for GridGeo	Business Strategy	$1 5M-$2 5M	Add remaining features, identified by the Macomber Map functional assessment, into GridGeo Platform to provide the necessary capability to retire the Macomber Map application for Control Room use Future effort required to decommission the Black Start version GridGeo platform will also be integrated into the Operator Training Simulator (OTS) environment, so that training capability matches the real-time operations environment	Increase the supportability and maintainability of the wide-area system awareness function and provide a modern platform to support the operational changes necessary for the Grid Operations and Planning functions	Execution
228-01	Enterprise Database Upgrade	Technical Foundation	$1 5M-$2 0M	Upgrade enterprise databases to a more recent version	Minimize extended support fees, have continued access to security fixes and improvements, support applications that are certified on current database versions and take advantage of new development and management features	Execution
288-01	EDI Map and Translator Replacement	Technical Foundation	$2 0M-$3 0M	Replacement of current legacy solution with one based on platform products ERCOT already owns to increase reliability and supportability	Alignment with technical health program ensuring all applications are supportable and reside on a reliable platform as well as reducing unnecessary technical diversity	Execution
288-03	Siebel Upgrade	Technical Foundation	$1 0M-$1 5M	Upgrade Siebel application along with the operating system and database to a more current version Provides alignment to the technical health program by ensuring all applications are supported and reside on a stable and reliable platform	Incresase system reliability and supportability Provide increased ability to meet Service Level Agreements	Execution
307-01	MMS OS Technological Refresh	Technical Foundation	$5 0M-$7 0M	Upgrade the Market Management and the Outage Scheduler Systems (MMS/OS) application platform to a significantly newer versions in line with ERCOT technical health roadmaps	Ensure supportability of the MMS/OS product suite and provide capability for future enhanced market functions	Execution
313-01	Office 365 Phase 1	Technical Foundation	$1 0M-$1 5M	Migrate ERCOT to an updated email platform	Simplify ERCOT's infrastructure landscape, improve patching capabilities and simplify ERCOT's ability to manage information & enforce policies	Execution
321-01	Tech Refresh - REC Rewrite	Technical Foundation	$800k-$1 2M	Re-write of ERCOT's Renewable Energy Credit (REC) application to address security enhancements, technology refreshes, and additional limited business functionality	Provide comprehensive audit capabilities and monitoring similar to other externally-facing applications at ERCOT Reduce potential security vulnerabilities	Execution
326-01	Project Portfolio Management (PPM) Tool Implementation	Business Strategy	$1 25M-$1 75M	Implement a centralized Project & Portfolio Management tool supported by integration with other key systems, in order to deliver a centralized PPM decision support platform that achieves automation and architectural alignment	Provide a centralized decision support system platform and process management that will help manage the portfolio and resources in alignment with strategic priorities, increase efficiency, reduce risk and improve business continuity through increase of automation capabilities for portfolio and project management processes Improve quality, consistency and timeliness of data used for more real-time, transparent project and portfolio situational awareness and decision-making	Execution

Major ERCOT Capital Projects Expected to Complete in 2021					12
Project No.	**Project**	**Project Category**	**Budget Range**	**Summary Description**	**Benefit Summary**	**04/02/2021 Status**
338-01	Implementation of NPRR986 BESTF-2 and NPRR971	Business Strategy	$500k-$750k	NPRR986 - BESTF-2 energy Storage Resource Energy Offer Curves, Pricing Dispatch and Mitigation This NPRR is one of several that ERCOT plans to submit to support participation by ESRs under the combination model during the interim period The concepts incorporated here, which are consistent with Nodal market design, will be carried over to the single-model era

NPRR971 - Replacing the Real-Time Average Incremental Energy Cost This NPRR replaces the Average Incremental Energy Cost (AIEC) used in Real-Time Settlements with the Energy Offer Curve cost caps | NPRR986 BEST-2 Under current rules, Resources' Energy Offer Curves are frozen at the end of the Adjustment Period – a full hour prior to the start of an Operating Hour. The proposed modifications to Section 4 4 9 3 would enable expanded flexibility for fast-acting ESRs

NPRR971 NPRRs that modify the timing of submission for Energy Offer Curves and NPRRs that modify the ERCOT creation or modification of submitted Energy Offer Curves (Section 6 5 7 3, Security Constrained Economic Dispatch) result in unintended Settlement system impacts. Replacing the Real-Time AIEC (RT AIEC) should result in minimal impact to Qualified Scheduling Entity (QSE) Settlement and will reduce the impact of future system changes | Execution |
344-01	Platform Refresh - RHEL Upgrade	Technical Foundation	$400k-$600k	Upgrade the Red Hat Enterprise Linux (RHEL) application platform to a significantly newer version in line with ERCOT technical health roadmaps	Provide better support automation, patch management, and technical flexibility in service to ERCOT's current goals.	Execution
352-01	CIM Upgrade for MMS	Technical Foundation	$500k-$1M	The EMS Upgrade has a vendor requirement for ERCOT to upgrade the network model integration format to the latest version of CIM (Common Information Model) Because ERCOT recognizes the importance of consistent network model loads, this project will upgrade the MMS network model integration format	Reduced model maintenance labor (validation and loading) for both EMS and MMS. Using only one network model eliminates model discrepancies	Planning
346-01	BES (Bulk Electrical System) Active Directory Isolation	Technical Foundation	$800k-$1 2M	Create a new modern ERCOT identity and authentication security infrastructure for the BES environment under NERC audit	Reduce potential environment risk by separating and hardening key components	Planning

Attachment B3

A schedule summarizing ERCOT's sources and uses of funds for a six-year period
beginning with the last historic calendar year and projections
for the next five calendar years.

Electric Reliability Council of Texas
Sources and Uses of Funds Summary
($ in Millions)

Line	Description		2020 Actual		2021 Budget		2022 Projection		2023 Projection		2024 Projection		2025 Projection
1	**Sources of Funds**												
2	System Administration Fee Revenues	$	212.2	$	229.3	$	236.2	$	242.9	$	250.0	$	255.9
3	Reliability Organization Assessment Fee		19.4		19.8		19.8		19.8		19.8		19.8
4	Interest Income		4.3		20.0		20.0		20.0		20.0		20.0
5	Other Revenues		6.9		6.1		6.2		6.4		6.5		6.7
6	**Total Sources of Funds**	$	**242.7**	$	**275.2**	$	**282.3**	$	**289.1**	$	**296.3**	$	**302.4**
7													
8	**Uses of Funds**												
9	Department Expenditures	$	178.4	$	187.2	$	193.5	$	200.8	$	207.6	$	215.3
10	Project Expenditures		38.2		34.0		39.3		52.7		48.9		31.3
11	Reliability Organization Assessment		19.4		19.8		19.8		19.8		19.8		19.8
12	Debt Service		5.6		5.5		5.3		5.0		5.0		5.2
13	Repayment of CRR Borrowings		-		-		-		-		-		-
14	Increase in Cash Balance		1.2		28.7		24.4		10.8		15.1		30.9
15	**Total Uses of Funds**	$	**242.7**	$	**275.2**	$	**282.3**	$	**289.1**	$	**296.3**	$	**302.4**
16													
17	**Sources of Funds less Uses of Funds**	$	**-**	$	**-**	$	**-**	$	**-**	$	**-**	$	**-**

Note: Schedule may not foot due to rounding.

Attachment B4

Long-term goals for all ERCOT activities (See also Attachment A).

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Attachment B(iv):
Long Term Performance Goals

2021 ERCOT Enterprise OKRs

1 Deliver defined stages of the Passport Program

2 Complete market-facing initiatives advancing reliable operations, market systems and data transparency

3 Implement improvements in technological capabilities and financial processes

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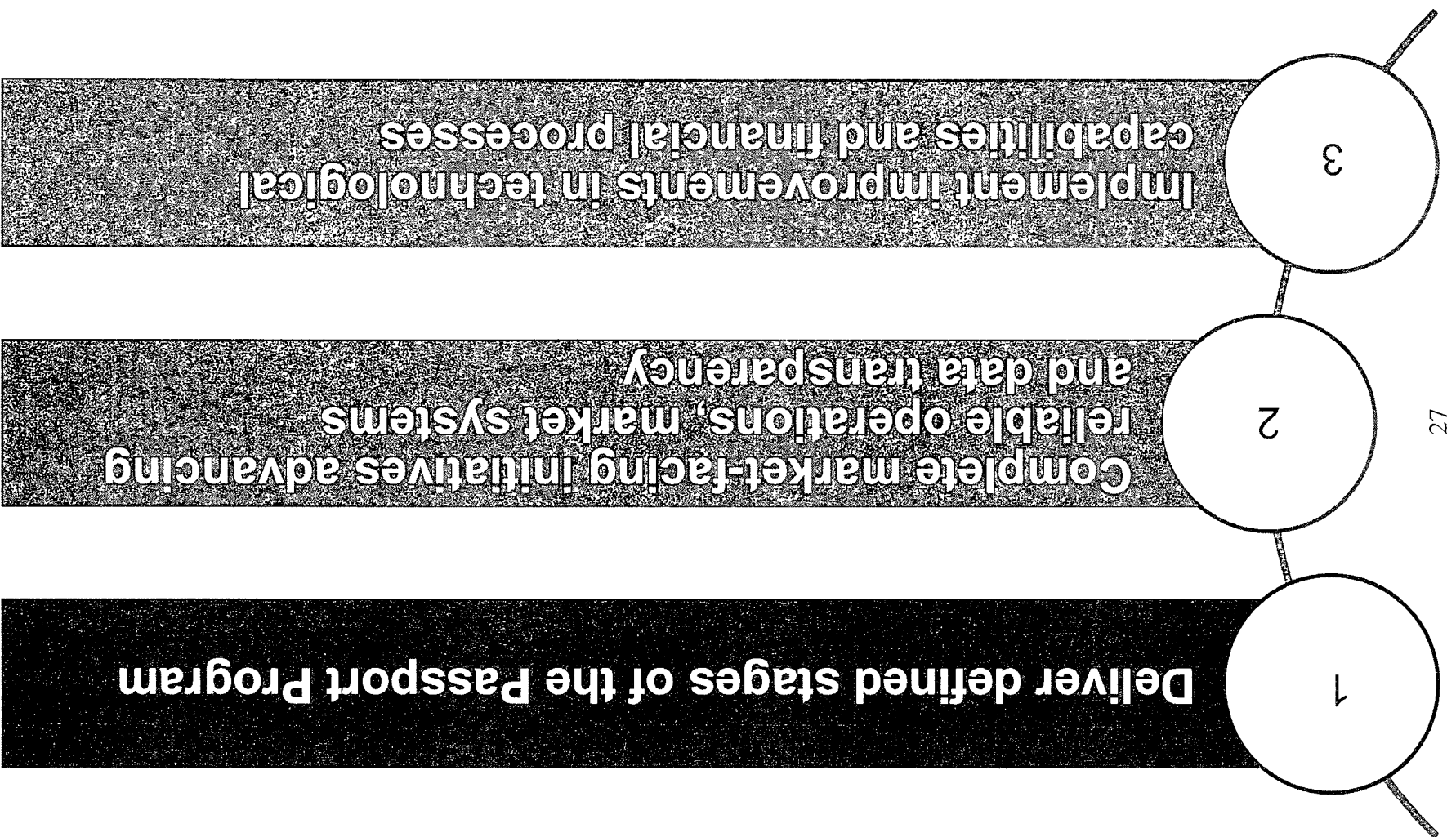
2021 Key Performance Indicators (KPIs)

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2021 KPI – Reliable Grid

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
RG 1	Rickerson	Grid Security Management	Control Performance Standard 1 (CPS1) frequency control performance (rolling 12 month CPS1 score)	> 140	> 150
RG 2	Rickerson	Grid Security Management	Interconnection Reliability Operating Limit exceedance limitations	None longer than 20 minutes	None longer than 10 minutes
RG 3	Rickerson	Outage Coordination / Planning	Outage Coordination performance: requests approved or denied within timeline and with mitigation plans developed if required	97%	99%
RG 4	Rickerson	Forecasting	Operations Load Forecast performance: Mean Average Percent Error (MAPE): monthly average day ahead load forecasts used for DRUC MAPE	All less than 4.0%	All less than 3.5%
RG 5	Rickerson	Forecasting	Wind forecast performance: MAPE based on installed wind capacity: monthly average day ahead wind forecasts used for DRUC MAPE	All less than 10%	All less than 8%
RG 6	Rickerson	Forecasting	Solar forecast performance - MAPE based on installed solar capacity: monthly average day ahead solar forecasts used for DRUC MAPE.	All less than 15%	All less than 10%
RG 7	N/A	N/A	RG7 intentionally left blank	N/A	N/A
RG 8	Day	Compliance Monitoring & Reporting	Achieve compliance with SOC controls	No exceptions found in an SOC audit	N/A
RG 9	Parakkuth	IT Application Services	Energy Management System Tier 1 Aggregate Availability	All Tier 1 systems meet or exceed defined SLAs	N/A
RG 10	Parakkuth	IT Application Services	Energy Management System Tier 2 Aggregate Availability	Achieve 99.9% availability for 10 of 11 Tier 2 systems	Achieve 99.9% availability for all Tier 2 systems
RG 11	Parakkuth	IT Application Services	Security Constrained Economic Dispatch (SCED) Availability	99.95%	100%
RG 12	Parakkuth	IT Application Services	SCED: number of unplanned outages greater than 30 consecutive minutes (per quarter)	Zero	N/A
RG 13	Parakkuth	IT Application Services	Outage Scheduler Availability	99%	99.5%
RG 14	Parakkuth	IT Application Services	Network Model Management System (NMMS) Availability	99%	99.5%

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2021 KPI – Reliable Grid (Internal)

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
RG_i 15	Parakkuth	IT Application Services	HRUC executed every hour: percent of complete HRUC's per month, including ones missed due to database loads and site failover	99%	99.5%
RG_i 16	Parakkuth	IT Application Services	No loss of VSAT/TSAT application functionality for 30 continuous minutes or longer, excluding invalid solutions due to State Estimator dependencies and planned site failovers	3 per Quarter	1 per Quarter
RG_i 17	Rickerson	System Planning	Regional Planning project Review Studies completed on time without substantive error	95% complete on time or no more than 1 late if less than 20 projects.	99% complete on time.
RG_i 18	Rickerson	Transmission Connection Management	Generation Interconnection Request (GIR) screening studies completed on time without errors	95% completed on time or no more than 1 late if less than 20 GIRs	100% completed on time
RG_i 19 Removed N/A	N/A	N/A	RG_i 19 intentionally left blank	N/A	N/A
RG_i 20	Rickerson	Operations Training	Achieve "Very Satisfied" or "Satisfied" ratings on ERCOT Operator training surveys	90% satisfied or highly satisfied	95% satisfied or highly satisfied

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2021 KPI – Efficient Markets

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
EM 1	Ögelman	Bidding, Scheduling & Pricing	DAM quality of solution as measured with price corrections. percent of hourly prices requiring DAM price correction.	1-3 % of time	< 1 % of time
EM 2	Ögelman	Bidding, Scheduling & Pricing	SCED solution is solved and posted: percent of 15-minute Settlement Interval prices where price corrections are performed. This measure includes corrections from routine work (e.g., database loads and site failover).	0.25% - 1%	<0.25%
EM 3	Ogelman	Settlement & Billing	Achieve timely settlements, per Protocol defined timelines	99%	100%
EM 4	Ögelman	Settlement & Billing	Perform accurate settlements as measured by the percent of statements/invoices that do not require a correction as a result of an error in the settlement and billing systems or processes.	98%	99.9%
EM 5	Ògelman	Market Credit	Credit reports are correct and posted in a timely manner	98%	100%
EM 6	Gage	Market Information	Wholesale extracts available per Protocol timelines.	98%	99%
EM 7	Parakkuth	IT Application Services	Congestion Revenue Rights (CRR) Availability	99%	99.5%
EM 8	Parakkuth	IT Application Services	Market Management System Aggregate Availability	99%	99.5%

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2021 KPI – Efficient Markets (Internal)

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
EM_i 9	Ogelman	Bidding, Scheduling & Pricing	Percent of days with successful DAM execution solution completed and posted successfully	100%	N/A
EM_i 10	Ogelman	Bidding, Scheduling & Pricing	DAM executions completed in acceptable timeframe: percent of days with posting solution before 1600	98%	100%
EM_i 11	N/A	N/A	EM_i 11 intentionally left blank.	N/A	N/A
EM_i 12	Ogelman	Wholesale Metering, Data Collection & Data Aggregation	AMS interval data is loaded into ERCOT systems by final settlement from the MRE in accordance with Protocols for data loading	99%	99.75%
EM_i 13	Ogelman	Wholesale Metering, Data Collection & Data Aggregation	IDR meter data is loaded into ERCOT systems by true-up settlement from the MRE in accordance with Protocols for settlement	99%	99.75%
EM_i 14	Ogelman	Wholesale Metering, Data Collection & Data Aggregation	EPS meter data is accurate and complete as measured by the percent of data that doesn't change after an initial settlement	99%	99.9%
EM_i 15	Ogelman	CRR Management	CRR auctions are performed according to Nodal Protocols Requirements (7.5 1). CRR auctions results are validated and posted as required by the CRR Activity Calendar.	All Monthly Auctions and LTASs are posted on time per the CRR Activity Calendar	N/A
EM_i 16	Gage	Dispute Management	Process disputes in time for resolution by the next available settlement statement per Protocol timelines or Client Services resolution targets	98%	100%
EM_i 17	Gage	Client Services	Complete Market Participant outreach (site visits, WebEx, telephone or email) according to Client Services annual outreach plan	98%	100%
EM_i 18	Gage	Account Management	Achieve "Very Satisfied" or "Satisfied" ratings on annual survey of Account Management services	90% satisfied or highly satisfied	95% satisfied or highly satisfied

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2021 KPI – Open Access & Retail Choice (Board & Internal)

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
OARC 1	Ögelman	Customer Switching / Registry	Conduct retail transaction processing per Protocol timelines	98%	99%
OARC 2	Ögelman	Customer Switching / Registry	End use customer switch notifications processed per PUCT rules	99%	100%
OARC 3	Gage	Market Information	Retail extracts available per Protocol timelines	98%	99%
OARC 4	Parakkuth	IT Application Services	Retail Processing Availability - Bus. Hours	99.9%	99.95%
OARC 5	Parakkuth	IT Application Services	Market Information System (MIS) Availability	99%	99.5%
OARC_i 6	Parakkuth	IT Application Services	Retail Processing Availability - Non bus. Hours	99%	99.5%
OARC_i 7	Parakkuth	IT Application Services	Retail API Availability	99%	99.5%
OARC_i 8	Parakkuth	IT Application Services	MarkeTrak Availability	99%	99.5%
OARC_i 9	Ögelman	Dispute Management	Manage retail transaction issues and disputes within defined timelines	96%	98%

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2021 KPI – Other Support & Management Functions (Board & Internal)

KPI Identifier	Executive	Capability	KPI Description	Target	Stretch
OSM 1	Taylor	Finance	Manage spending to be equal to or less than the board-approved expenditure budget	Zero or favorable variance	N/A
OSM 2	Day	Security	Maintain ERCOT ISO's security posture against cyber security threats as defined in the Security Incident Response Plan	Zero externally reportable cyber security incidents	N/A
OSM 3	Day	Security	Maintain ERCOT ISO's security posture against physical security threats as defined in the Security Incident Response Plan	Zero externally reportable physical security incidents	N/A
OSM_i 4	Parakkuth	IT Application Services	Operate data centers providing availability consistent with data center designed objectives	99 98%	100%
OSM_i 5	Magness	Internal Audit	Execute the Internal Audit Plan as approved by the Finance and Audit Committee having all audit projects either completed or in process by end of year	100% in process by year end	N/A
OSM_i 6	Gage	Corporate Communications	ERCOT Energy Emergency Alert Communications· Corporate Communications provides follow-up communications and media/public notifications per Crisis Communications Procedure	100%	N/A

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Attachment B5

An evaluation of ERCOT's performance in meeting its responsibilities and
system expectations during the current budget year.

Electric Reliability Council of Texas, Inc.
2021 Budget vs Year-end Forecast
($ in Millions)

Line	Description		2021 Budget		2021 Year-end Forecast (as of 4.1.21)		Variance
1	**System Administration Revenue**	S	229.3	S	225.3	S	(4.0)
2	**Department Net Expenditures**						
3	Chief Information Office		83.1		84.8		(1.7)
4	Chief Administrative Office		42.7		44.2		(1.5)
5	Grid Planning & Operations		34.3		34.9		(0.6)
6	Commercial Operations		16.6		17.0		(0.3)
7	External Affairs & Corporate Communications		7.4		7.0		0.3
8	General Counsel		6.0		8.8		(2.8)
9	Chief Executive Office		2.8		3.1		(0.3)
10	Project Funded Labor		(11.8)		(13.5)		1.6
11	**Total Department Net Expenditures**		181.1		186.4		(5.3)
12	**Net Revenues After Department Expenditures**		48.2		38.9		(9.3)
13							
14	**Project Expenditures**						
15	Current Budget Year Project Expenditures		32.3		33.5		(1.2)
16	2021 Budget Expended in 2020		1.7		-		1.7
17	**Less: Total Project Expenditures**		34.0		33.5		0.5
18	**Less: Met Center Replacement**		-		4.8		(4.8)
19	**Less: Interest Expense**		1.5		1.5		-
20	**Add: Interest Income**		20.0		0.2		(19.8)
21							
22	**Net Available**	$	32.7	$	(0.7)	$	(33.4)

Notes: Schedule may not foot due to rounding.

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Attachment C2

A schedule comparing actual revenues and costs to budgeted revenues and costs for the report year, a schedule showing the variance between actual and budgeted revenues and costs, and a schedule showing the assets and liabilities (including level and types of debt).

Electric Reliability Council of Texas, Inc.
2020 Budget vs Actual
($ in Millions)

Line	Description		2020 Budget		2020 Actual		Variance
1	System Administration Revenue	$	222.6	$	212.2	$	(10.5)
2	Department Net Expenditures						
3	Chief Information Office		80.4		80.6		(0.2)
4	Chief Administrative Office		41.2		40.1		1.1
5	Grid Planning & Operations		33.8		32.8		1.0
6	Commercial Operations		16.0		16.0		(0.1)
7	External Affairs & Corporate Communications		7.1		6.4		0.6
8	General Counsel		5.9		5.4		0.5
9	Chief Executive Office		2.8		2.1		0.7
10	Project Funded Labor		(11.9)		(11.9)		-
11	**Total Department Net Expenditures**		**175.2**		**171.6**		**3.6**
12	**Net Revenues After Department Expenditures**		**47.4**		**40.6**		**(6.9)**
13	**Less: Project Expenditures**		32.0		38.2		(6.2)
14	**Less: Interest Expense**		1.7		1.6		0.1
15	**Add: Interest Income**		20.0		4.3		(15.7)
16	**Net Available**	$	**33.7**	$	**5.2**	$	**(28.7)**

Notes: Schedule may not foot due to rounding.

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Attachment C3

The annual board-approved budget.

PROJECT NO. 38533

PUC REVIEW OF ERCOT BUDGET	§	**PUBLIC UTILITY COMMISSION**
	§	
	§	**OF TEXAS**

ERCOT'S 2020/2021 BIENNIAL BUDGET AND SYSTEM ADMINISTRATION FEE SUBMISSION

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<center>

PUCT PROJECT NO. 38533

</center>

PUC REVIEW OF ERCOT BUDGET	§	**PUBLIC UTILITY COMMISSION**
	§	
	§	**OF TEXAS**

<center>

ERCOT'S 2020/2021 BIENNIAL BUDGET AND
SYSTEM ADMINISTRATION FEE SUBMISSION

</center>

COMES NOW, Electric Reliability Council of Texas, Inc. (ERCOT) and files its *2020/2021 Biennial Budget and System Administration Fee Submission*, pursuant to 16 Tex. Admin. Code (TAC) § 25.363(d) and the Commission's *Order Approving ERCOT's 2018-2019 Biennial Budget and Authorizing The System Administration Fee* (2018/2019 Order), for review by the Public Utility Commission of Texas (Commission). The 2020/2021 ERCOT biennial budget included in this submission does not contemplate a change in the ERCOT system administration fee, which ERCOT plans to maintain at $0.555 per megawatt hour (MWh) through 2021.

<center>

I.   Procedural Requirements

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The Commission adopted 16 TAC § 25.363(d) on March 22, 2011. The rule provides that ERCOT's annual budget and any change in the system administration fee, if one was sought, are subject to review by the Commission, and sets forth a process for Commission participation in the budget development process for ERCOT.

The 2020/2021 ERCOT biennial budget included in this submission contemplates no increase in the ERCOT system administration fee of $0.555 per MWh for years 2020 and 2021. ERCOT's request does not seek to revise the manner in which the system administration fee is charged and collected, which the Commission has previously found to be reasonable and competitively neutral.[1]

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[1] *See Application of the Electric Reliability Council of Texas to Change the ERCOT Administrative Fee,* Docket No. 28832 (March 18, 2004); *Application of the Electric Reliability Council for Approval of the ERCOT Administrative Fee,* Docket No. 31824 (May 15, 2006).

In its *2020/2021 Biennial Budget and System Administration Fee Submission*, ERCOT has included information and data supporting the reasonableness of its budget request that have been requested by Commission staff and have been presented to the ERCOT Board of Directors (ERCOT Board) as part of its consideration of the 2020/2021 ERCOT biennial budget and system administration fee.

A. Contents of ERCOT's Biennial Budget Submission

In addition to this pleading, ERCOT's biennial budget submission includes the following attachments:

A. ERCOT Board resolution approving proposed 2020/2021 biennial budget and system administration fee;

B. ERCOT staff presentations of the 2020/2021 biennial budget and system administration fee to the Finance and Audit (F&A) Committee of the ERCOT Board on June 10, 2019, and to the ERCOT Board on June 11, 2019;

C. Statement of ERCOT Chief Executive Officer summarizing ERCOT's 2020/2021 biennial budget and system administration fee;

D. ERCOT 2020/2021 biennial budget schedules and work papers;

E. ERCOT 2019 – 2023 Strategic Plan; and

F. ERCOT report on performance measures for 2018.

B. Consultation with Commission Staff

In accordance with 16 TAC § 25.363(d), ERCOT staff consulted "with commission staff designated by the executive director in connection with the development of the budget," and provided "to the staff information concerning budget strategies, staffing requirements, categories of expenses, capital outlays, exceptional expenses and capital items, and proposals to incur additional debt." In preparation of the 2020/2021 biennial budget for ERCOT Board approval in June 2019, ERCOT and Commission staff began holding regular meetings as early as December 2018. Between the consultation meetings, ERCOT staff responded to informal information requests from Commission staff regarding particular budget categories and the format of

ERCOT's budget presentation. To ERCOT's knowledge, it has responded to all the requests or concerns raised by Commission staff in the consultation process.

As part of the consultation meetings, Commission staff recommended that ERCOT continue to utilize a format for structuring the budget filed with the Commission that includes the key components of the Legislative Appropriations Request (LAR) utilized by the Texas Legislative Budget Board. ERCOT has organized its budget schedules to conform to the LAR format to the extent possible, and has prepared a summary statement from ERCOT's Chief Executive Officer similar to the LAR "Administrator's Statement." Commission staff requested that ERCOT file a biennial, rather than annual, budget for review beginning with the 2014/2015 budget cycle. As stated and pursuant to the 2018/2019 Order, ERCOT has organized its 2020/2021 biennial budget schedules, in which no system administration fee increase is being sought, to resemble the LAR format.

C.   ERCOT Board Approval of 2020/2021 ERCOT Biennial Budget and System Administration Fee

The ERCOT Board approved the proposed 2020/2021 ERCOT biennial budget and system administration fee at its meeting on June 11, 2019. The ERCOT Board adopted the 2020/2021 biennial budget recommendations of ERCOT staff and the ERCOT Board's F&A Committee, which included identification of operating expenses, project spending, and debt service obligations. The F&A Committee discussed the development of the 2020/2021 ERCOT biennial budget in public meetings held in the first and second quarters of 2019.[2] A copy of the June 11, 2019 ERCOT Board resolution approving the 2020/2021 ERCOT biennial budget is included in this submission as Attachment A. The 2020/2021 biennial budget presentation made by ERCOT staff at the June 10, 2019 F&A Committee meeting is included as Attachment B, for which a recommendation for ERCOT Board approval was made by the F&A Committee at the June 11, 2019 ERCOT Board meeting.

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[2] The F&A Committee agendas and budget presentation materials are available at: http://www.ercot.com/committees/board/finance_audit/.

The ERCOT Board's decision to approve the 2020/2021 ERCOT biennial budget and system administration fee was not appealed by any party to the Commission. The Commission's procedural rules require that if a party seeks Commission review of "ERCOT conduct," the party must file its complaint at the Commission "within 35 days of the ERCOT conduct complained of ...."[3] In relation to the Commission's procedural rules related to ERCOT conduct, the term "conduct" is defined as "a decision or an act done or omitted to be done."[4] Under ERCOT's governing documents, a vote of the ERCOT Board constitutes a "decision" made by ERCOT.[5] The thirty-five (35) day appeal period expired on July 16, 2019, and no party has contested the ERCOT Board's approval of the 2020/2021 ERCOT biennial budget and system administration fee, which has a proposed effective date of the beginning of ERCOT's new fiscal year on January 1, 2020.

II.   The ERCOT 2020/2021 Biennial Budget and System Administration Fee Proposal

In its 2020/2021 biennial budget and system administration fee proposal, ERCOT seeks to implement a sustainable financial plan that meets ERCOT's technology and business requirements, while also maintaining the current system administration fee at $0.555 per MWh. The proposed biennial budget approved by the ERCOT Board includes $268,310,985 for ERCOT's fiscal year 2020 and $275,156,917 for ERCOT's fiscal year 2021 in total spending authorization for operating expenses, project spending, and debt service obligations. It is ERCOT management's intention that the $0.555 per MWh system administration fee will remain in effect through the 2020/2021 biennium. ERCOT management is committed to promptly notifying the Commission and market participants of developments that would materially impact ERCOT's ability to operate within its requested budget and system administration fee structure.

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[3] 16 TAC § 22.251(d). A party may also file a request for alternative dispute resolution (ADR) under Section 20 of the ERCOT Protocols to contest ERCOT decisions. ERCOT would not expect a party contesting the budget to file for ADR rather than appealing to the Commission under 16 TAC § 22.251, but ERCOT notes for the record that no party filed an ADR contesting the ERCOT Board's approval of the 2020/2021 ERCOT biennial budget and system administration fee.

[4] *Id.*, 16 TAC § 22.251(b).

[5] ERCOT Bylaws, Section 4.7(b).

III. Budget Drivers for 2020/2021

In its presentations to the ERCOT Board, and in its consultation meetings with Commission staff, ERCOT has identified three budget request drivers for 2020/2021 as follows:

1. Maintain a flat system administration fee at $0.555 per MWh, which is consistent relative to the approved 2018/2019 biennial budget;

2. Incorporate key initiatives and new demands; and

3. Comply with the ERCOT Board's debt strategy guidance.

Maintenance of a Flat System Administration Fee
Consistent Relative to Approved 2018/2019 Biennial Budget

ERCOT has prioritized maintaining consistency relative to the approved 2018/2019 biennial budget as one of its three budget drivers. To maintain this consistency relative to the approved 2018/2019 biennial budget, ERCOT will maintain the current system administration fee of $0.555 per MWh through the 2021 budget year. In addition, relative to the approved 2018/2019 biennial budget, ERCOT will continue to maintain department net expenditures consistent with prior projections, add a Real-Time Co-optimization (RTC) Project, maintain project expenditures with a consistent multi-year approach of approximately $200 million across six years (including major refreshes), expect a material increase in system administration fee revenues due to higher load growth, and expect a significant increase in interest income due to more Congestion Revenue Rights (CRR) auction receipts and higher interest rates.

At the January 17, 2019 Commission Open Meeting, the Commission discussed RTC and gave direction on three matters. First, ERCOT should begin the process to implement RTC in the ERCOT market. Second, ERCOT shall report back to the Commission with "a high level implementation plan and timeline."[6] And lastly, ERCOT shall set aside "any favorable variance in revenues" for fiscal years 2018 and 2019. With respect to the favorable financial variance, ERCOT forecasts a total favorable financial variance of approximately $50.3 million for fiscal years 2018 and 2019. The final favorable financial variance for 2018, based on the audited financial statements and presented to the ERCOT Board on April 2019, is approximately $17.1

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[6] *Review of Real-Time Co-Optimization in the ERCOT Market*, Project No. 48540, Chairman DeAnn T. Walker's Memorandum to Commissioners Arthur C. D'Andrea and Shelly Botkin (Jan. 16, 2019).

million; and the favorable financial variance for 2019 is forecast to be approximately $33.2 million. The final favorable financial variance for 2019 is expected to be presented to the ERCOT Board in April 2020 based on the audited financial statements for 2019. ERCOT has discussed this plan for the RTC Project with both the Commission and the ERCOT Board.[7]

Incorporation of Key Initiatives and New Demands

For another budget driver, ERCOT has incorporated key initiatives and new demands, but expects to recognize efficiency savings to help offset costs of these new demands. ERCOT will incorporate its strategic plan objectives by enhancing operating capabilities to maintain reliability of an increasingly complex system, improving information exchange to facilitate collaborative interaction, advancing competitive solutions for a changing industry, and optimizing use of ERCOT's resources to provide high-value services continuously. New demands placed upon ERCOT include regulatory requirements, protocol and planning revisions, and system improvements to manage ERCOT business and an increasingly complex grid better. With regard to the regulatory requirements, ERCOT anticipates information technology change management and configuration management improvements for Critical Infrastructure Protection (CIP) compliance as well as increasing amounts of stability analyses using new types of data and new techniques. In addition, ERCOT expects protocol and planning revisions, including stability assessments for interconnecting generation, voltage set point communications, and interconnection study increases. As to the system improvements, ERCOT expects to develop and/or refine grid operations capabilities by implementing Security Constrained Unit Commitment (SCUC) and Reactive Power Coordination (RPC). In addition, Senate Bill 936 requires the Commission and ERCOT to contract with an entity to serve as the Commission cybersecurity monitor. According to the legislation, ERCOT shall provide support, access and information to the cybersecurity monitor necessary for the monitor to operate and will use funds from the system administration fee to pay for the monitor's operations.

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[7] *Review of Real-Time Co-Optimization in the ERCOT Market*, Project No. 48540, Letter from ERCOT Vice President and General Counsel Chad V. Seely to Chairman DeAnn T. Walker, Commissioner Arthur C. D'Andrea and Commissioner Shelly Botkin (Jan. 31, 2019); *Discussion of 2020-2021 Biennial Budget Assumptions*, presented by ERCOT Controller Sean Taylor for Agenda Item 4 of the Apr. 8, 2019 ERCOT F&A Committee Meeting; and *2020-2021 Budget and Fee*, presented by ERCOT Unaffiliated Director and F&A Committee Chairman Terry Bulger for Agenda Item 8.1 of the Jun. 11, 2019 ERCOT Board Meeting.

<u>Compliance with the ERCOT Board's Debt Strategy Guidance</u>

The final budget driver is ERCOT's need to comply with the ERCOT Board's debt strategy guidance. In order to maintain compliance with this strategy, ERCOT will maintain or improve ERCOT's long-term financial integrity by continuing to decrease outstanding debt and increase liquidity. ERCOT will maintain stable, fair and predictable fees by using debt matching appropriately. In addition, ERCOT will provide lowest cost to system administration fee-payers by using the lowest cost debt that is available and appropriate.

As an ongoing effort to maintain the current system administration fee level, ERCOT management continues to seek areas of opportunity to improve operational efficiency. ERCOT management has improved operational efficiency through a variety of efficiency initiatives. Examples of efficiency savings ERCOT has implemented to help offset costs of new demands include: (1) the Congestion Revenue Rights (CRR) Framework Upgrade created efficiencies, helping offset the increased workload resulting from the introduction of the 3-year CRR auctions; (2) the Statistical Analysis System (SAS) Technical Architecture Redesign reduced hardware and maintenance costs, helping offset increased system support labor; and (3) the increase to the Regional Planning Group's (RPG) review threshold reduced workload, helping offset increased workload from Sub-Synchronous Resonance studies. ERCOT continues to streamline its processes for low-risk, low-cost projects, thereby reducing complexity and staff time and delivering to the market and other users faster. ERCOT management will actively continue to seek these types of opportunities for improved operational efficiency throughout the 2020/2021 biennial budget years.

**IV.   Compliance with Instructions for Submission of ERCOT's
Proposed 2020/2021 Biennial Budget**
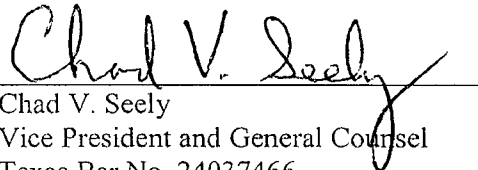
Pursuant to the 2018/2019 Order, ERCOT is filing this proposed biennial budget for its fiscal years 2020 and 2021 no later than September 1, 2019, and in accordance with the instructions for submission as provided in the 2018/2019 Order.

V.   Conclusion

ERCOT's 2020/2021 Biennial Budget and System Administration Fee Submission, and the consultation process with Commission staff prior to seeking ERCOT Board approval of its biennial budget and system administration fee, conform to the requirements for approval of the ERCOT budget included in 16 TAC § 25.363(d) and the 2018/2019 Order. ERCOT respectfully requests that, prior to the beginning of ERCOT's 2020 fiscal year, the Commission take the actions necessary to approve the 2020/2021 ERCOT biennial budget and authorize the proposed maintenance of the current system administration fee of $0.555 per MWh for ERCOT's fiscal years 2020 and 2021.

Respectfully Submitted,

Chad V. Seely
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vickie.leady@ercot.com

ERCOT
7620 Metro Center Drive
Austin, TX 78744

ATTORNEYS FOR ELECTRIC RELIABILITY
COUNCIL OF TEXAS, INC.

Attachment A

ERCOT Board Resolution Approving
Proposed 2020/2021 Biennial Budget and
System Administration Fee

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ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.
BOARD OF DIRECTORS RESOLUTION

WHEREAS, after due consideration of the alternatives, the Board of Directors (Board) of Electric Reliability Council of Texas, Inc. (ERCOT) deems it desirable and in the best interest of ERCOT to accept the recommendations of ERCOT staff and the Finance and Audit (F&A) Committee that the Board approve the ERCOT recommended 2020-2021 Biennial Budget (Budget), which includes operating expenses, project spending, and debt service obligations; and

WHEREAS, Sections 4.10 (*Duties*) and 10.3 (*Budget*) of the Amended and Restated Bylaws of Electric Reliability Council of Texas, Inc., approved on January 17, 2019 (Bylaws), requires that the Board approve the Budget; and

WHEREAS, ERCOT staff discussed financial assumptions, methodologies and schedules relating to the Budget in a public meeting with the F&A Committee, and consulted with the staff of the Public Utility Commission of Texas (PUCT) regarding development of the Budget; and

WHEREAS, ERCOT staff presented its recommended 2020-2021 Biennial Budget, which includes a total spending authorization of $268,310,985 and $275,156,917 respectively; and

WHEREAS, the Budget recommended by ERCOT staff will keep the ERCOT system administration fee flat at $0.5550 for 2020 and 2021;

THEREFORE, BE IT RESOLVED, that the Board hereby:
- Approves the recommended 2020-2021 Biennial Budget as set forth in <u>Attachment A</u>, which includes $268,310,985 and $275,156,917 total spending authorization for operating expenses, project spending, and debt service obligations for 2020 and 2021, respectively; and
- Approves the request for the ERCOT system administration fee of $0.5550 per megawatt-hour for 2020 and 2021 as set forth in <u>Attachment B</u>; and
- Authorizes ERCOT Legal to file the Board-approved 2020-2021 Biennial Budget for approval by the PUCT, pursuant to P.U.C. SUBST. R. 25.363(d).
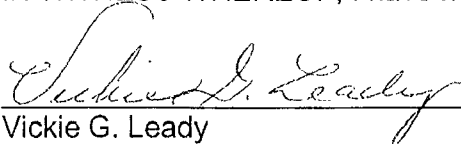
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CORPORATE SECRETARY'S CERTIFICATE

I, Vickie G. Leady, Assistant Corporate Secretary of ERCOT, do hereby certify that, at its June 11, 2019 meeting, the ERCOT Board passed a motion approving the above Resolution by unanimous voice vote with no abstentions.

IN WITNESS WHEREOF, I have hereunto set my hand this 20th day of June, 2019.

Vickie G. Leady
Assistant Corporate Secretary

Attachment A
Fiscal Years 2020-2021 Management Recommended Budget
($ in Thousands)

Sources and Uses		2018 Actual		2019 Budget		2019 Forecast		2020 Request		2021 Request		2022 Projection		2023 Projection		2024 Projection		2025 Projection
1	System Administration Fee Revenues	$	209,881	$	207,425	$	211,663	$	222,640	$	229,274	$	236,244	$	242,865	$	249,986	$	255,869
2	Reliability Organization Assessment *		16,328		15,000		15,789		19,800		19,800		19,800		19,800		19,800		19,800
3	Interest Income		13,091		1,300		20,000		20,000		20,000		20,000		20,000		20,000		20,000
4	Other Revenues		5,630		4,287		6,533		5,871		6,083		6,235		6,391		6,544		6,695
5	**Total Sources**	**$**	**244,929**	**$**	**228,012**	**$**	**253,985**	**$**	**268,311**	**$**	**275,157**	**$**	**282,279**	**$**	**289,056**	**$**	**296,330**	**$**	**302,363**
6	Department Expenditures	$	162,252	$	172,936	$	173,148	$	181,086	$	187,168	$	193,496	$	200,779	$	207,567	$	215,258
7	Project Expenditures		40,324		28,500		20,400		32,000		34,000		39,250		52,650		48,850		31,250
8	Reliability Organization Assessment *		16,328		15,000		15,789		19,800		19,800		19,800		19,800		19,800		19,800
9	Debt Service		5,438		5,997		5,821		5,683		5,531		5,340		5,007		5,010		5,170
10	Repayment of CRR Borrowings		20,587		5,580		12,639		-		-		-		-		-		-
11	Increase in Cash Balance		-		-		26,188		29,741		28,657		24,392		10,820		15,104		30,885
12	**Total Uses**	**$**	**244,929**	**$**	**228,012**	**$**	**253,985**	**$**	**268,311**	**$**	**275,157**	**$**	**282,279**	**$**	**289,056**	**$**	**296,330**	**$**	**302,363**

* Reliability Organization Assessment is a pass-through collected on behalf of the Texas Regional Entity; it is not set by ERCOT.

Schedule may not foot due to rounding

Attachment B
Fiscal Years 2020-2021 Management Recommended Budget
($ in Thousands)

Budget Summary

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	System Administration Fee Rate	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550
2	Energy Consumption (GWH)	378,163	373,739	381,374	401,153	413,107	425,665	437,595	450,426	461,025
3	System Administration Fee Revenues	$ 209,881	$ 207,425	$ 211,663	$ 222,640	$ 229,274	$ 236,244	$ 242,865	$ 249,986	$ 255,869
4	Department Net Expenditures	$ 156,623	$ 168,649	$ 166,616	$ 175,215	$ 181,085	$ 187,262	$ 194,388	$ 201,023	$ 208,564
5	Project Expenditures	40,324	28,500	20,400	29,000	29,000	27,250	42,650	38,850	31,250
6	Real Time Co-optimization Project	-	-	-	3,000	5,000	12,000	10,000	10,000	-
7	Total Net Expenditures	$ 196,947	$ 197,149	$ 187,016	$ 207,215	$ 215,085	$ 226,512	$ 247,038	$ 249,873	$ 239,814
8	Net Available Before Non-Operating Sources & Uses	$ 12,934	$ 10,277	$ 24,647	$ 15,425	$ 14,189	$ 9,733	$ (4,173)	$ 114	$ 16,055
9	Debt Service	$ (5,438)	$ (5,997)	$ (5,821)	$ (5,683)	$ (5,531)	$ (5,340)	$ (5,007)	$ (5,010)	$ (5,170)
10	Interest Income	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
11	Non-Operating Sources & Uses	$ 7,653	$ (4,697)	$ 14,179	$ 14,317	$ 14,469	$ 14,660	$ 14,993	$ 14,990	$ 14,830
12	Net Available	$ 20,587	$ 5,580	$ 38,826	$ 29,741	$ 28,657	$ 24,392	$ 10,820	$ 15,104	$ 30,885

Year-End Balances: Notes Payable, CRR Borrowings, Cash, and Real Time Co-optimization Project Funding

		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
13	Notes Payable Balance	$ 55,000	$ 51,000	$ 51,000	$ 47,000	$ 43,000	$ 39,000	$ 35,000	$ 31,000	$ 27,000
14	CRR Borrowings Balance	$ 12,639	$ 7,059	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Cash Balance	$ -	$ -	$ 26,188	$ 55,929	$ 84,586	$ 108,978	$ 119,798	$ 134,902	$ 165,786
16	Real Time Co-optimization Project Funding Balance	$ 17,089	$ -	$ 50,335	$ 47,335	$ 42,335	$ 30,335	$ 20,335	$ 10,335	$ 10,335

Schedule may not foot due to rounding.

Attachment B

ERCOT Staff Presentations of the 2020/2021 Biennial Budget and
System Administration Fee to the Finance and Audit Committee
of the ERCOT Board of Directors on June 10, 2019, and
to the ERCOT Board of Directors on June 11, 2019

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The Finance & Audit (F&A) Committee is expected to consider
F&A Committee Agenda Item 4:

Recommendation regarding 2020-2021 Budget and Fee

at its meeting on June 10, 2019.

The Board of Directors is expected to hear the F&A Committee's recommendation on this matter as part of the F&A Committee Report at the Board meeting on June 11, 2019.

Attached are the Board and Committee materials in relation to these agenda items.

Item 4: Recommendation regarding 2020-2021 Budget and Fee

Sean Taylor
Controller

Finance & Audit Committee Meeting

ERCOT Public
June 10, 2019

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2020-2021 Budget and Fee Requirements

ERCOT Bylaw Requirement

- Sections 4.10 (Duties) and 10.3 (Budget): It is the duty of the ERCOT Board to approve the budget.

Finance & Audit Committee Charter Requirement

- With respect to budget oversight...
    - Annually or biennially, the Committee shall review staff's proposed budget for the following year(s).
    - The Committee shall review the staff's recommendation of the amount and type of financing needed, both revenue and debt financing, to support the proposed budget and meet the Company's liquidity needs.
    - Following the Committee's review of the above items, the Committee shall recommend to the Board, a proposed budget and associated financing plan for the following year(s).

<VOTE> following presentation

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Agenda

1. Overview of the Budget Process

2. Budget Request Drivers
   * Maintain Flat Fee
   * Incorporate Key Initiatives and New Demands
   * Comply with Board's Debt Strategy Guidance

3. Real Time Co-optimization Project and Funding

4. Budget Request

5. Financial Ratios

6. Risks to Meeting 2020-2021 Recommended Budget

7. Request to Vote

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Overview of the Budget Process

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Overview of the Budget Process

Strategic Plan

- Vision
- Mission
- Strategic Objectives

Executive Accountability:
- Review
- Challenge
- Collaborate
- Communicate

Business Plans

- Operationalize Strategic Plan
- Objectives
- Key Results

Project Budget

- PPL (Project Priority List)
- Approved initiatives and anticipated efforts

Real Time Co-optimization Project and Funding

Department Budgets

- Bottom-up first cut
- Top-down review

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Item 4
ERCOT Public

Budget Request Drivers

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Budget Request Drivers: Maintain Flat Fee

System Administration Fee
- Consistent Rate of $0.555

Relative to 2018-2019 Approved Budget
- Department Net Expenditures – consistent with prior projections

- Real Time Co-optimization Project – new item added

- Project Expenditures – consistent multi-year approach of approximately $200 Million across six years, including major refreshes

- System Administration Fee Revenues – increased materially due to higher load growth

- Interest Income – increased significantly due to more Congestion Revenue Rights (CRR) auction receipts and higher interest rates

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Budget Request Drivers:
Incorporate Key Initiatives and New Demands

Strategic Plan Objectives

- Enhance operating capabilities to maintain reliability of an increasingly complex system.

- Improve information exchange to facilitate collaborative interaction.

- Advance competitive solutions for a changing industry.

- Optimize use of ERCOT, Inc.'s resources to continuously provide high-value services.

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Budget Request Drivers:
Incorporate Key Initiatives and New Demands

New Demands Include:

- Regulatory Requirements
  - IT Change Management and Configuration Management improvements for Critical Infrastructure Protection (CIP) Compliance
  - Emergency Operations Plans for Reliability Standards

- Protocol and Planning Revisions
  - Stability Assessments for interconnecting generation
  - Voltage Set Point Communications
  - Interconnection Study Increases

- System Improvements to better manage ERCOT business and an increasingly complex grid
  - System Grid Geospatially (Grid Geo) Viewed Program
  - Enterprise Content Alignment Program (ECAP) Taxonomy and Governance

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Budget Request Drivers:
Incorporate Key Initiatives and New Demands

Efficiency Savings Help Offset Costs of New Demands

- CRR Changes and Improvements
  - 3-year CRR auction increased workload
  - CRR Framework Upgrade created efficiencies

- Statistical Analysis System (SAS) Technical Architecture Redesign
  - System support labor increased
  - Hardware cost and maintenance decreased

- Transmission Planning Revisions
  - Sub-Synchronous Resonance studies increase workload
  - Increasing the Regional Planning Group (RPG) review threshold reduces workload

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Budget Request Drivers:
Comply with Board's Debt Strategy Guidance

Maintain or Improve ERCOT's Financial Integrity
*   Continue to decrease outstanding debt and increase liquidity.

Maintain Stable, Fair and Predictable Fees
*   Use debt matching appropriately.

Provide Lowest Cost to Fee-Payers
*   Use lowest cost debt that is available and appropriate.

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Budget Request Drivers:
Comply with Board's Debt Strategy Guidance

Use of CRR Funds: Actual vs Limits
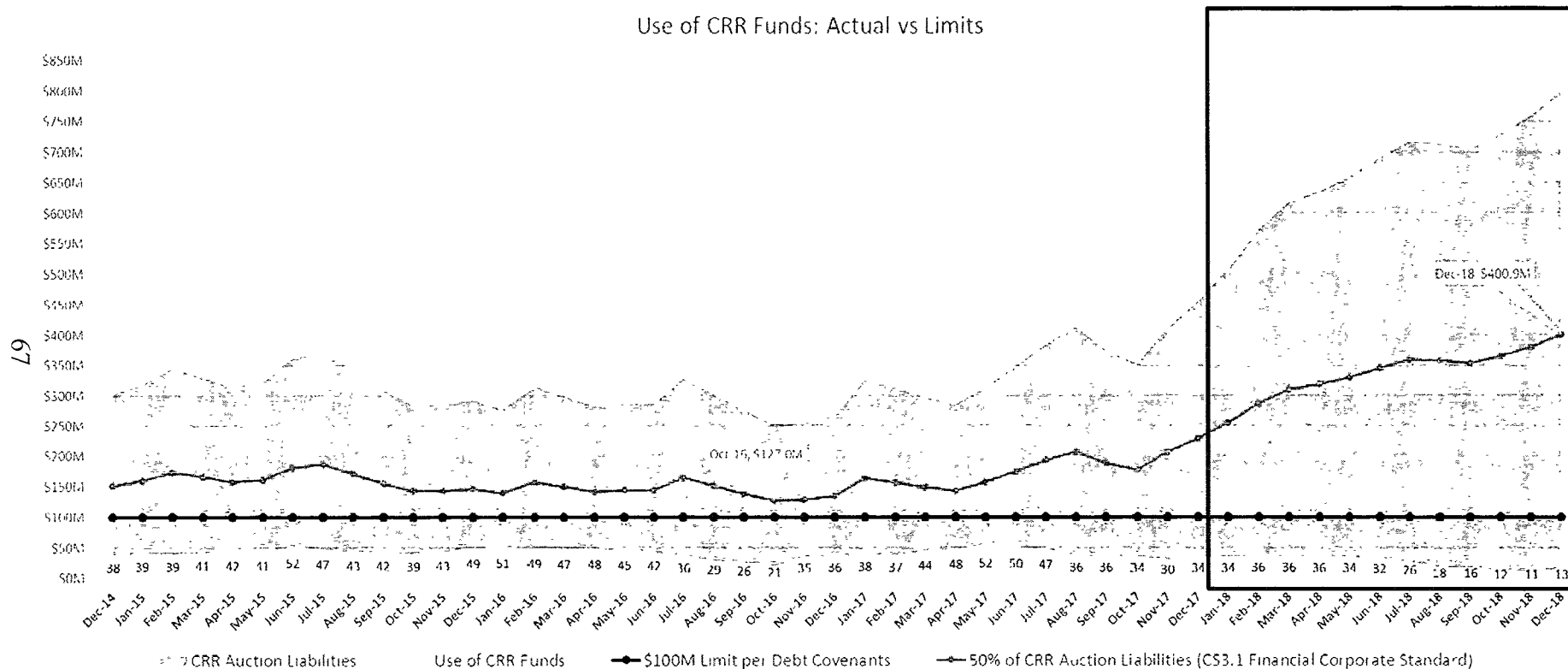
Use of CRR Funds (CRR Borrowings) =
Amount Owed to Market Participants - Cash and Bond Investments

Real Time Co-optimization
Project and Funding

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Real Time Co-optimization Project and Funding

Real Time Co-optimization

I believe real time co-optimization brings not only economic benefits that exceed its costs, but operational benefits for ERCOT as well. These benefits and costs were discussed in detail by ERCOT and the IMM in filings made on June 29, 2018. After consideration of the information provided by ERCOT, the IMM, and the many parties that commented on the issue, I propose that the Commission instruct ERCOT to proceed with the implementation of real time co-optimization. If the Commission determines that real time co-optimization should be implemented, then there are additional issues that must be addressed either by the Commission or in the stakeholder process before ERCOT can move forward with implementation.

If the Commission decides to implement real time co-optimization, then I propose having the Commission Staff bring back to the Commission on February 7th a list of policy issues that can be published for stakeholder comment. I also propose requesting that ERCOT submit a high-level implementation plan and timeline, so that the Commission can determine the expectations for timing and milestones during the implementation of the project. Lastly, I propose that the project be funded through the favorable variance in the revenues that occurred in 2018 and will likely occur in 2019 by ERCOT. Such funds should be set aside for future use for this project.

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Real Time Co-optimization Project and Funding

$ in Millions

Favorable Financial Variances	2018 Actual	2019 Forecast	Total
System Administration Fee Revenues	$ 8.1	$ 4.2	$ 12.3
Department Net Expenditures	8.4	2.0	10.5
Project Expenditures	(11.8)	8.1	(3.7)
Debt Service	0.6	0.2	0.8
Interest Income	11.8	18.7	30.5
Available for Real Time Co-optimization Project	**$ 17.1**	**$ 33.2**	**$ 50.3**

Schedule may not foot due to rounding.

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Real Time Co-optimization Project and Funding

Statement of Financial Position Reporting

$ in Millions	Pre RTC	2018-2019 Favorable Variance	Adjusted for Variance	$35 M RTC Assets Addition	Adjusted for Asset Add	$5 M RTC Direct Expense	Adjusted for Direct Expense	Depreciate RTC Assets	Post RTC
Assets									
Unrestricted cash	$ 791.3		$ 791.3	$ (35.0)	$ 756.3	$ (5.0)	$ 751.3		$ 751.3
Bond investments	100.3		100.3		100.3		100.3		100 3
Total unrestricted cash and bond investments *(a)*	891.6		891.6	(35.0)	856.6	(5.0)	851.6		851.6
Restricted cash	458.5		458.5		458.5		458.5		458.5
Other current assets	36 5		36.5		36.5		36.5		36.5
Other long term assets	143.2		143.2	35.0	178.2		178.2	(35.0)	143.2
Total assets	$1,529.8		$1,529.8	$ -	$ 1,529.8	$ (5.0)	$ 1,524.8	$ (35.0)	$1,489.8
Liabilities and Net Assets									
CRR auction liabilities-current	$ 498.3		$ 498.3		$ 498.3		$ 498 3		$ 498.3
CRR auction liabilities-long term	303 4		303.4		303.4		303.4		303.4
Other market liabilities	102.5		102.5		102.5		102 5		102 5
Total market settlement liabilities *(b)*	904.2		904.2		904.2		904.2		904.2
Security deposits	458.5		458 5		458.5		458.5		458.5
Other current liabilities	25.5		25.5		25 5		25 5		25 5
Other long term liabilities	51.2		51.2		51.2		51 2		51.2
2018-2019 Favorable Variance		50.3	50.3	(35 0)	15.3	(5.0)	10.3		10.3
Other net assets	90.3	(50.3)	40.0	35.0	75.0		75.0	(35.0)	40.0
Total net assets without donor restrictions	90.3	-	90.3	-	90.3	(5.0)	85.3	(35.0)	50.3
Total liabilities and net assets	$1,529 8	$ -	$1,529.8	$ -	$ 1,529.8	$ (5.0)	$ 1,524.8	$ (35.0)	$1,489.8
CRR Borrowings [(b)-(a)]	$ 12.6	$ -	$ 12.6	$ 35.0	$ 47.6	$ 5.0	$ 52.6	$ -	$ 52.6

Note: These numbers are for discussion purposes only.

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Item 4
ERCOT Public

Budget Request

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Budget Request:
Management Recommended Flat Fee ($0.555)

$ in Thousands, except rates

Budget Summary

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	System Administration Fee Rate	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550	$ 0.5550
2	Energy Consumption (GWH)	378,163	373,739	381,374	401,153	413,107	425,665	437,595	450,426	461,025
3	System Administration Fee Revenues	$ 209,881	$ 207,425	$ 211,663	$ 222,640	$ 229,274	$ 236,244	$ 242,865	$ 249,986	$ 255,869
4	Department Net Expenditures	$ 156,623	$ 168,649	$ 166,616	$ 175,215	$ 181,085	$ 187,262	$ 194,388	$ 201,023	$ 208,564
5	Project Expenditures	40,324	28,500	20,400	29,000	29,000	27,250	42,650	38,850	31,250
6	Real Time Co-optimization Project	-	-	-	3,000	5,000	12,000	10,000	10,000	-
7	Total Net Expenditures	$ 196,947	$ 197,149	$ 187,016	$ 207,215	$ 215,085	$ 226,512	$ 247,038	$ 249,873	$ 239,814
8	Net Available Before Non-Operating Sources & Uses	$ 12,934	$ 10,277	$ 24,647	$ 15,425	$ 14,189	$ 9,733	$ (4,173)	$ 114	$ 16,055
9	Debt Service	$ (5,438)	$ (5,997)	$ (5,821)	$ (5,683)	$ (5,531)	$ (5,340)	$ (5,007)	$ (5,010)	$ (5,170)
10	Interest Income	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
11	Non-Operating Sources & Uses	$ 7,653	$ (4,697)	$ 14,179	$ 14,317	$ 14,469	$ 14,660	$ 14,993	$ 14,990	$ 14,830
12	Net Available	$ 20,587	$ 5,580	$ 38,826	$ 29,741	$ 28,657	$ 24,392	$ 10,820	$ 15,104	$ 30,885

Year-End Balances: Notes Payable, CRR Borrowings, Cash, and Real Time Co-optimization Project Funding

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
13	Notes Payable Balance	$ 55,000	$ 51,000	$ 51,000	$ 47,000	$ 43,000	$ 39,000	$ 35,000	$ 31,000	$ 27,000
14	CRR Borrowings Balance	$ 12,639	$ 7,059	$ -	$ -	$ -	$ -	$ -	$ -	$ -
15	Cash Balance	$ -	$ -	$ 26,188	$ 55,929	$ 84,586	$ 108,978	$ 119,798	$ 134,902	$ 165,786
16	Real Time Co-optimization Project Funding Balance	$ 17,089	$ -	$ 50,335	$ 47,335	$ 42,335	$ 30,335	$ 20,335	$ 10,335	$ 10,335

Schedule may not foot due to rounding.

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Budget Request:
Management Recommended Flat Fee ($0.555)

$ in Thousands

($ in Thousands)

Sources and Uses	2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1 System Administration Fee Revenues	$ 209,881	$ 207,425	$ 211,663	$ 222,640	$ 229,274	$ 236,244	$ 242,865	$ 249,986	$ 255,869
2 Reliability Organization Assessment *	16,328	15,000	15,789	19,800	19,800	19,800	19,800	19,800	19,800
3 Interest Income	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
4 Other Revenues	5,630	4,287	6,533	5,871	6,083	6,235	6,391	6,544	6,695
5 **Total Sources**	**$ 244,929**	**$ 228,012**	**$ 253,985**	**$ 268,311**	**$ 275,157**	**$ 282,279**	**$ 289,056**	**$ 296,330**	**$ 302,363**
6 Department Expenditures	$ 162,252	$ 172,936	$ 173,148	$ 181,086	$ 187,168	$ 193,496	$ 200,779	$ 207,567	$ 215,258
7 Project Expenditures	40,324	28,500	20,400	32,000	34,000	39,250	52,650	48,850	31,250
8 Reliability Organization Assessment *	16,328	15,000	15,789	19,800	19,800	19,800	19,800	19,800	19,800
9 Debt Service	5,438	5,997	5,821	5,683	5,531	5,340	5,007	5,010	5,170
10 Repayment of CRR Borrowings	20,587	5,580	12,639	-	-	-	-	-	-
11 Increase in Cash Balance	-	-	26,188	29,741	28,657	24,392	10,820	15,104	30,885
12 **Total Uses**	**$ 244,929**	**$ 228,012**	**$ 253,985**	**$ 268,311**	**$ 275,157**	**$ 282,279**	**$ 289,056**	**$ 296,330**	**$ 302,363**

* Reliability Organization Assessment is a pass-through collected on behalf of the Texas Regional Entity; it is not set by ERCOT.

Schedule may not foot due to rounding

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Budget Request: Comparison to 2018-2019 Approved Budget
Debt, CRR Borrowings, and Cash Balances at End of Year 2025

Cash Balance Less Notes Payable Balance

Use of CRR Funds Plus Notes Payable Balance

$200 M
$150 M
$100 M
$50 M
$-
$(50) M
$(100) M
$(150) M

$(110.0)
$6.7
$50.3
$(40.0)
$(5.0)
$5.0
$1.1
$118.9
$111.8
$138.8

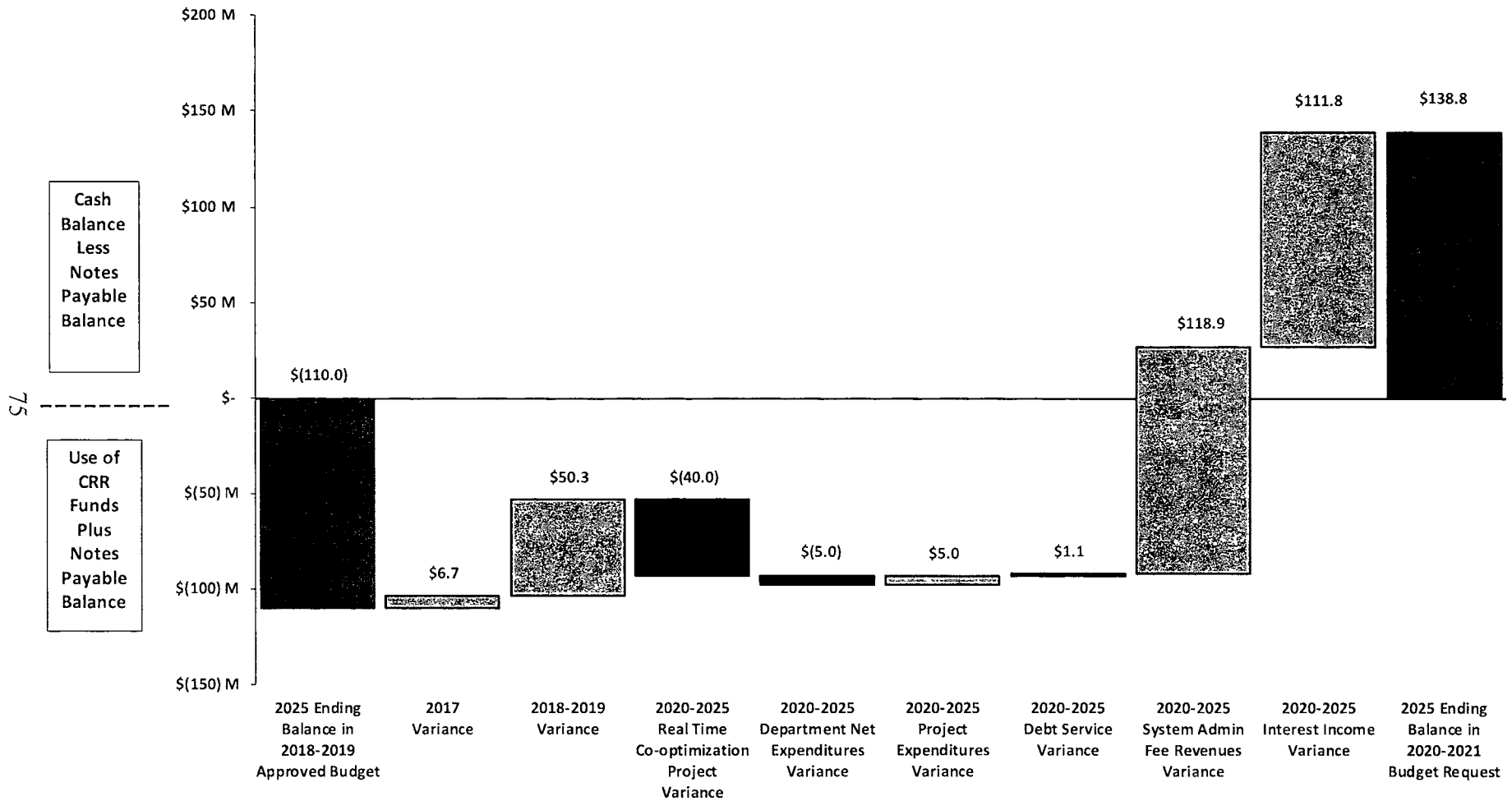| 2025 Ending Balance in 2018-2019 Approved Budget | 2017 Variance | 2018-2019 Variance | 2020-2025 Real Time Co-optimization Project Variance | 2020-2025 Department Net Expenditures Variance | 2020-2025 Project Expenditures Variance | 2020-2025 Debt Service Variance | 2020-2025 System Admin Fee Revenues Variance | 2020-2025 Interest Income Variance | 2025 Ending Balance in 2020-2021 Budget Request |

Chart may not foot due to rounding.

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Financial Ratios

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Financial Ratios

$ in Thousands

Debt Service Coverage Ratio

		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
	Revenues									
1	System Administration Fee Revenues	$ 209,881	$ 207,425	$ 211,663	$ 222,640	$ 229,274	$ 236,244	$ 242,865	$ 249,986	$ 255,869
2	Reliability Organization Assessment	16,328	15,000	15,789	19,800	19,800	19,800	19,800	19,800	19,800
3	Interest Income	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
4	Other Revenues	5,630	4,287	6,533	5,871	6,083	6,235	6,391	6,544	6,695
5	**Total Revenues**	**244,929**	**228,012**	**253,985**	**268,311**	**275,157**	**282,279**	**289,056**	**296,330**	**302,363**
	Less: Expenditures									
6	Department Expenditures	162,252	172,936	173,148	181,086	187,168	193,496	200,779	207,567	215,258
7	Project Expenditures	40,324	28,500	20,400	32,000	34,000	39,250	52,650	48,850	31,250
8	Reliability Organization Assessment	16,328	15,000	15,789	19,800	19,800	19,800	19,800	19,800	19,800
9	**Free Cash Flow (FCF)**	**$ 26,025**	**$ 11,577**	**$ 44,648**	**$ 35,425**	**$ 34,189**	**$ 29,733**	**$ 15,827**	**$ 20,114**	**$ 36,055**
10	Interest Expense	1,438	1,997	1,821	1,683	1,531	1,340	1,007	1,010	1,170
11	Principal Payment	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000
12	**Total Debt Service**	**$ 5,438**	**$ 5,997**	**$ 5,821**	**$ 5,683**	**$ 5,531**	**$ 5,340**	**$ 5,007**	**$ 5,010**	**$ 5,170**
13	**Debt Service Coverage Ratio (FCF)**	**4.79**	**1.93**	**7.67**	**6.23**	**6.18**	**5.57**	**3.16**	**4.01**	**6.97**

Liquidity Ratio

		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
14	Department Expenditures (2 Month Average)	$ 27,042	$ 28,823	$ 28,858	$ 30,181	$ 31,195	$ 32,249	$ 33,463	$ 34,594	$ 35,876
15	Debt Service (6 Month Average)	2,719	2,999	2,911	2,842	2,766	2,670	2,504	2,505	2,585
16	Project Expenditures (2 Month Average)	6,721	4,750	3,400	5,333	5,667	6,542	8,775	8,142	5,208
17	**Targeted Minimum Level of Liquidity**	**$ 36,482**	**$ 36,571**	**$ 35,169**	**$ 38,356**	**$ 39,627**	**$ 41,461**	**$ 44,742**	**$ 45,241**	**$ 43,670**
18	**Undrawn Borrowing Capacity**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**	**$ 125,000**
19	**Liquidity Ratio**	**3.43**	**3.42**	**3.55**	**3.26**	**3.15**	**3.01**	**2.79**	**2.76**	**2.86**

Schedule may not foot due to rounding

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Item 4
ERCOT Public

Risks to Meeting
2020-2021 Recommended Budget

Risks to Meeting 2020-2021 Recommended Budget:
Higher-than-Projected Cost Inflation & Lower-than-Projected Load Growth
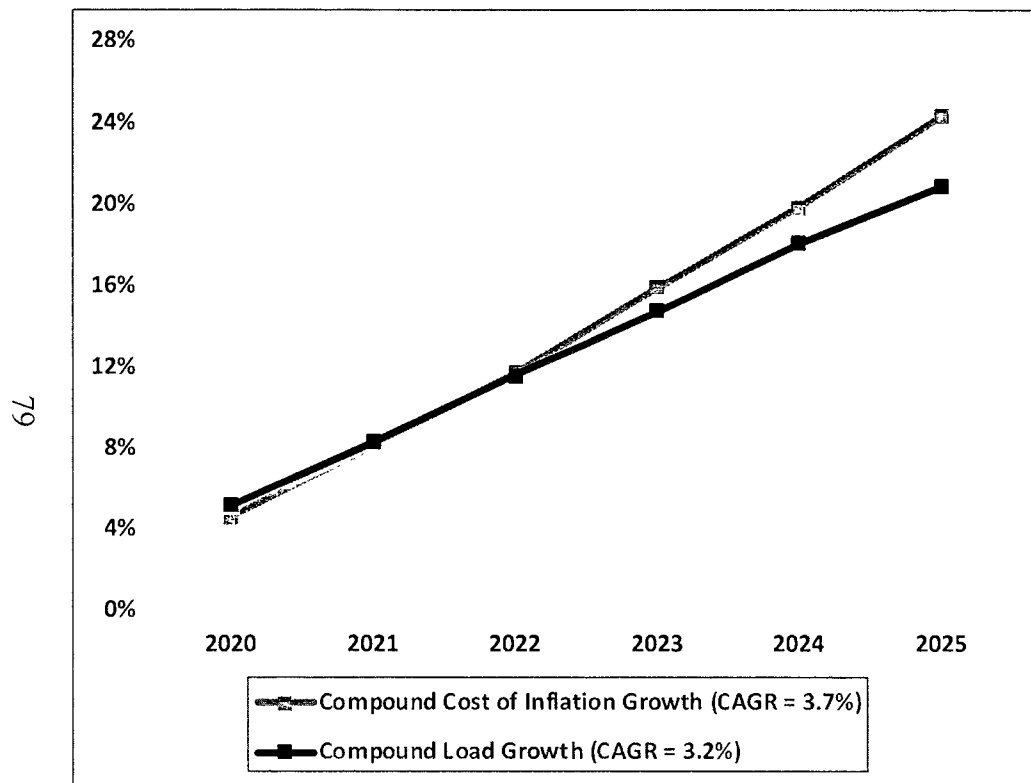
ERCOT's costs are forecast to continue to grow at a rate faster than load.

What is the sensitivity to ERCOT's financial health of variances to forecasts for these items?

Risks to Meeting 2020-2021 Recommended Budget:
Sensitivity Analysis – Higher-than-Projected Cost Inflation & Lower-than-Projected Load Growth

2025 Ending Cash Balance
$ in Millions

	CAGR for Six Year Department Expenditures (2020-2025)						
CAGR for Six Year Load Growth (2020-2025)	**6.0%**	**5.0%**	**4.0%**	**3.7%**	**3.0%**	**2.0%**	**1.0%**
0.0%	$ (83.3)	$ (39.7)	$ 2.5	$ 15.1	$ 43.4	$ 82.9	$ 121.1
1.0%	$ (38.1)	$ 5.5	$ 47.7	$ 60.3	$ 88.6	$ 128.1	$ 166.3
2.0%	$ 8.7	$ 52.3	$ 94.5	$ 107.1	$ 135.3	$ 174.8	$ 213.0
3.2%	$ 67.4	$ 111.0	$ 153.2	$ 165.8	$ 194.0	$ 233.5	$ 271.7
4.0%	$ 106.9	$ 150.5	$ 192.7	$ 205.3	$ 233.5	$ 273.0	$ 311.2
5.0%	$ 158.5	$ 202.1	$ 244.3	$ 256.9	$ 285.1	$ 324.6	$ 362.8
6.0%	$ 211.8	$ 255.4	$ 297.6	$ 310.2	$ 338.4	$ 377.9	$ 416.1

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Average Investment Balance

Effective Interest Rate						
$900 M						
$750 M						
$600 M						
$450 M						
$300 M						
$150 M						
$-						

2016 Actual, 2017 Actual, 2018 Actual, 2019 Forecast, 2020 Request, 2021 Request, 2022 Projection, 2023 Projection, 2024 Projection, 2025 Projection

0.0%, 0.5%, 1.0%, 1.5%, 2.0%, 2.5%, 3.0%

Effective Interest Rate

Average Balance — Effective Interest Rate
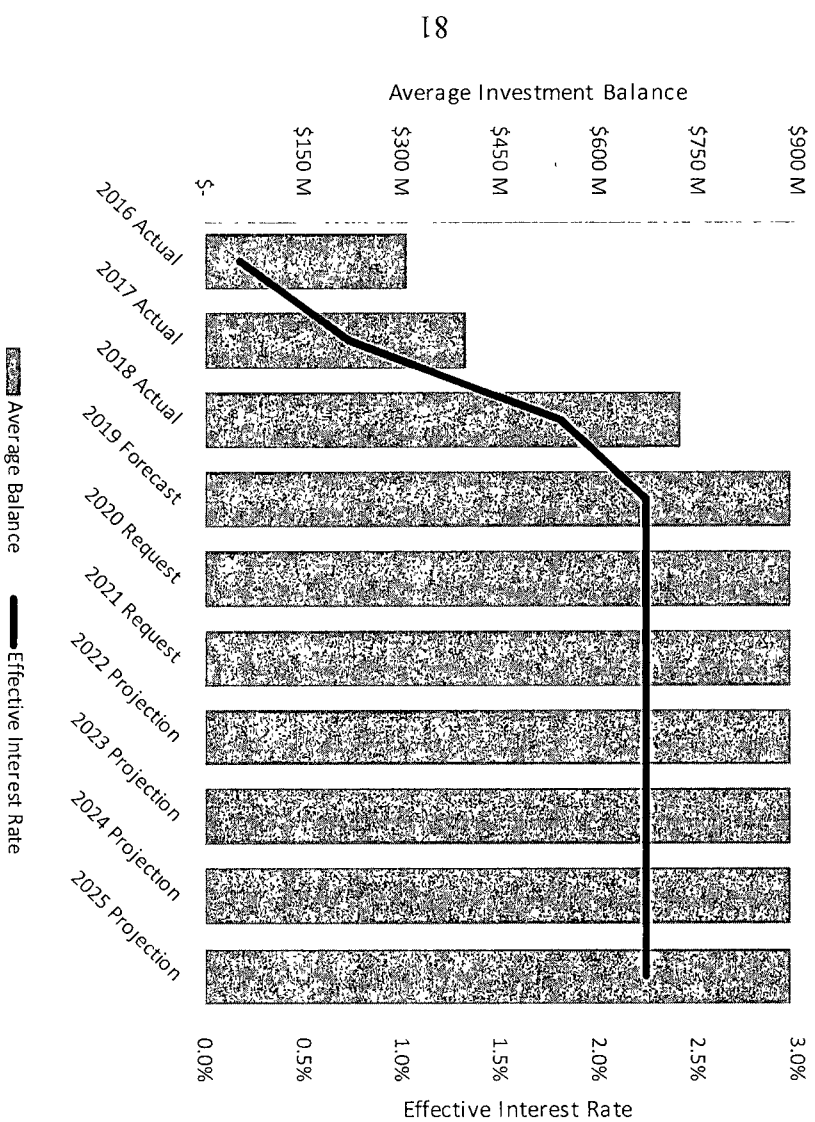
Interest rates and CRR balances are outside of our control.

What is the sensitivity to ERCOT's financial health of variances to forecasts for these items?

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Risks to Meeting 2020-2021 Recommended Budget:
Sensitivity Analysis – Lower-than-Projected Interest Income

2025 Ending Cash Balance
$ in Millions

	Average Investment Balance (2020-2025)						
	$ 300	**$ 500**	**$ 700**	**$ 890**	**$ 1,100**	**$ 1,300**	**$ 1,500**
0.75%	$ 59.1	$ 68.1	$ 77.1	$ 85.7	$ 95.1	$ 104.1	$ 113.1
1.25%	$ 68.1	$ 83.1	$ 98.1	$ 112.4	$ 128.1	$ 143.1	$ 158.1
1.75%	$ 77.1	$ 98.1	$ 119.1	$ 139.1	$ 161.1	$ 182.1	$ 203.1
2.25%	$ 86.1	$ 113.1	$ 140.1	$ 165.8	$ 194.1	$ 221.1	$ 248.1
2.75%	$ 95.1	$ 128.1	$ 161.1	$ 192.5	$ 227.1	$ 260.1	$ 293.1
3.25%	$ 104.1	$ 143.1	$ 182.1	$ 219.2	$ 260.1	$ 299.1	$ 338.1
3.75%	$ 113.1	$ 158.1	$ 203.1	$ 245.9	$ 293.1	$ 338.1	$ 383.1

Average Interest Rate (2020-2025)

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Risks to Meeting 2020-2021 Recommended Budget: Risks Summary and Mitigation

Potential Risks

- Higher-than-Projected Cost Inflation
- Lower-than-Projected Load Growth
- Lower-than-Projected Interest Income

Risk Characteristics

- Low Probability
- Slow Velocity

Mitigation Responses

- Reduce Department Net Expenditures (e.g., operational efficiencies)
- Reduce Project Expenditures
- Increase Debt & ERCOT's Use of CRR Funds

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2020-2021 Budget and Fee

Request for Vote

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Request for Vote

ERCOT staff recommends that the ERCOT Finance & Audit Committee recommend that the Board of Directors:

- Approve the recommended 2020-2021 Biennial Budget which includes $268,310,985 and $275,156,917 total spending authorization for operating expenses, project spending, and debt service obligations for 2020 and 2021, respectively;

- Approve the recommended ERCOT system administration fee of $0.5550 per megawatt-hour rate for 2020 and 2021, which represents no increase from the current ERCOT system administration fee; and

- Authorize ERCOT Legal to file the Board-approved 2020-2021 Biennial Budget for approval by the PUCT, pursuant to P.U.C. Substantive Rule Section 25.363(d).

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Appendices

1. Department Net Expenditures by Office
   - ERCOT
   - Chief Information Office
   - Chief Operating Office
   - Chief Administrative Office
   - External Affairs and Corporate Communications
   - General Counsel
   - Chief Executive Office

2. Project Expenditures
   - Summary
   - Project Priority List Details

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Department Net Expenditures by Office

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Department Net Expenditures by Office

$ in Thousands

ERCOT

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$ 88,918	$ 94,052	$ 92,653	$ 99,140	$ 103,174	$ 107,301	$ 111,593	$ 116,057	$ 120,699
2	Benefits & Taxes	27,534	30,873	30,201	31,698	33,470	34,809	36,201	37,649	39,155
3	Project Funded Labor	(10,518)	(9,794)	(9,177)	(11,851)	(11,842)	(12,538)	(12,538)	(13,235)	(13,235)
4	Vacancy	-	(3,010)	-	(3,271)	(3,416)	(3,501)	(3,589)	(3,675)	(3,760)
5	**Department Labor**	**$ 105,935**	**$ 112,121**	**$ 113,677**	**$ 115,717**	**$ 121,386**	**$ 126,069**	**$ 131,666**	**$ 136,795**	**$ 142,859**
6	Materials, Supplies & Equipment	661	840	782	780	801	821	842	862	882
7	HW/SW License & Maintenance	22,230	23,607	22,329	24,653	24,836	25,456	26,093	26,719	27,334
8	Outside Services	14,326	13,896	16,090	18,725	18,209	18,664	19,130	19,590	20,040
9	Utility, Maintenance & Facility	8,313	10,757	9,613	9,938	10,499	10,761	11,030	11,295	11,555
10	Employee Expenses	2,333	3,630	2,906	3,354	3,361	3,445	3,531	3,615	3,699
11	Insurance	2,222	2,804	2,327	2,423	2,534	2,598	2,663	2,726	2,789
12	Other Expenses	2,389	2,876	2,779	3,142	3,118	3,196	3,276	3,355	3,432
13	**Department Expense**	**$ 158,409**	**$ 170,531**	**$ 170,502**	**$ 178,731**	**$ 184,743**	**$ 191,011**	**$ 198,231**	**$ 204,958**	**$ 212,589**
14	Minor Capital & Common Infrastructure	3,842	2,405	2,647	2,356	2,425	2,486	2,548	2,609	2,669
15	**Subtotal - Department Expenditures**	**$ 162,251**	**$ 172,936**	**$ 173,149**	**$ 181,086**	**$ 187,168**	**$ 193,496**	**$ 200,779**	**$ 207,567**	**$ 215,258**
16										
17	**Revenues**	**$ (5,630)**	**$ (4,287)**	**$ (6,533)**	**$ (5,871)**	**$ (6,083)**	**$ (6,235)**	**$ (6,391)**	**$ (6,544)**	**$ (6,695)**
18										
19	**Total Department Net Expenditures**	**$ 156,621**	**$ 168,649**	**$ 166,616**	**$ 175,215**	**$ 181,085**	**$ 187,262**	**$ 194,388**	**$ 201,023**	**$ 208,564**

Schedule may not foot due to rounding.

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Department Net Expenditures by Office

$ in Thousands

Chief Information Office

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$ 30,149	$ 31,148	$ 30,820	$ 33,103	$ 34,537	$ 35,919	$ 37,355	$ 38,850	$ 40,404
2	Benefits & Taxes	9,298	10,196	9,997	10,515	11,135	11,580	12,043	12,525	13,026
3	Project Funded Labor	(7,523)	(6,801)	(6,249)	(7,855)	(7,904)	(8,369)	(8,369)	(8,834)	(8,834)
4	Vacancy	-	(1,009)	-	(1,090)	(1,142)	(1,170)	(1,200)	(1,228)	(1,257)
5	**Department Labor**	**$ 31,924**	**$ 33,534**	**$ 34,568**	**$ 34,672**	**$ 36,626**	**$ 37,960**	**$ 39,830**	**$ 41,312**	**$ 43,339**
6	Materials, Supplies & Equipment	130	123	131	147	155	159	163	167	171
7	HW/SW License & Maintenance	21,956	23,538	22,133	24,260	24,652	25,268	25,900	26,521	27,131
8	Outside Services	5,798	3,587	5,487	7,319	7,371	7,556	7,745	7,930	8,113
9	Utility, Maintenance & Facility	3,857	4,954	4,566	4,635	4,952	5,076	5,203	5,328	5,450
10	Employee Expenses	632	1,049	614	879	865	887	909	931	952
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	925	1,014	1,053	789	809	829	850	870	890
13	**Department Expense**	**$ 65,222**	**$ 67,799**	**$ 68,551**	**$ 72,701**	**$ 75,430**	**$ 77,734**	**$ 80,599**	**$ 83,060**	**$ 86,047**
14	Minor Capital & Common Infrastructure	2,646	890	1,090	1,361	1,405	1,440	1,476	1,512	1,546
15	**Subtotal - Department Expenditures**	**$ 67,868**	**$ 68,689**	**$ 69,641**	**$ 74,062**	**$ 76,835**	**$ 79,174**	**$ 82,075**	**$ 84,571**	**$ 87,593**
16										
17	***Revenues**	**$ (2,912)**	**$ (2,959)**	**$ (3,334)**	**$ (3,187)**	**$ (3,399)**	**$ (3,484)**	**$ (3,571)**	**$ (3,656)**	**$ (3,740)**
18										
19	**Total Department Net Expenditures**	**$ 64,956**	**$ 65,731**	**$ 66,307**	**$ 70,875**	**$ 73,437**	**$ 75,690**	**$ 78,504**	**$ 80,915**	**$ 83,852**

* Private Wide-Area Network Fees

Schedule may not foot due to rounding.

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Department Net Expenditures by Office

$ in Thousands

Chief Operating Office

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$ 40,171	$ 42,272	$ 41,563	$ 43,789	$ 45,546	$ 47,368	$ 49,263	$ 51,233	$ 53,283
2	Benefits & Taxes	12,792	14,223	13,968	14,365	15,174	15,781	16,413	17,069	17,752
3	Project Funded Labor	(1,228)	(1,040)	(1,279)	(1,458)	(1,400)	(1,482)	(1,482)	(1,565)	(1,565)
4	Vacancy	-	(1,348)	-	(1,454)	(1,518)	(1,556)	(1,595)	(1,633)	(1,671)
5	**Department Labor**	**$ 51,735**	**$ 54,107**	**$ 54,253**	**$ 55,243**	**$ 57,802**	**$ 60,111**	**$ 62,598**	**$ 65,104**	**$ 67,799**
6	Materials, Supplies & Equipment	494	699	636	595	606	621	637	652	667
7	HW/SW License & Maintenance	257	16	147	269	119	122	126	129	132
8	Outside Services	1,848	2,819	3,005	3,360	2,650	2,716	2,784	2,850	2,916
9	Utility, Maintenance & Facility	2,570	3,438	2,893	3,084	3,312	3,395	3,480	3,563	3,645
10	Employee Expenses	1,035	1,579	1,407	1,538	1,556	1,595	1,635	1,674	1,713
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	930	914	825	1,482	1,533	1,571	1,610	1,649	1,687
13	**Department Expense**	**$ 58,868**	**$ 63,571**	**$ 63,165**	**$ 65,571**	**$ 67,579**	**$ 70,132**	**$ 72,869**	**$ 75,622**	**$ 78,559**
14	Minor Capital & Common Infrastructure	1,196	1,515	1,557	995	1,020	1,045	1,072	1,097	1,123
15	**Subtotal - Department Expenditures**	**$ 60,064**	**$ 65,086**	**$ 64,722**	**$ 66,566**	**$ 68,599**	**$ 71,177**	**$ 73,941**	**$ 76,720**	**$ 79,681**
16										
17	***Revenues**	**$ (2,245)**	**$ (1,020)**	**$ (2,842)**	**$ (2,353)**	**$ (2,353)**	**$ (2,412)**	**$ (2,472)**	**$ (2,532)**	**$ (2,590)**
18										
19	**Total Department Net Expenditures**	**$ 57,819**	**$ 64,066**	**$ 61,880**	**$ 64,213**	**$ 66,246**	**$ 68,765**	**$ 71,469**	**$ 74,188**	**$ 77,091**

*Generation Interconnection Study Fees, Operations Training Seminar Registration Fees, & Blackstart Training Registration Fees

Schedule may not foot due to rounding.

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Department Net Expenditures by Office

$ in Thousands

Chief Administrative Office

Line			2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$	9,886	$ 11,491	$ 11,174	$ 12,535	$ 12,988	$ 13,508	$ 14,048	$ 14,610	$ 15,195
2	Benefits & Taxes		2,988	3,540	3,369	3,807	3,985	4,144	4,310	4,482	4,661
3	Project Funded Labor		(1,822)	(1,823)	(1,578)	(2,455)	(2,455)	(2,599)	(2,599)	(2,743)	(2,743)
4	Vacancy		-	(351)	-	(409)	(424)	(435)	(446)	(457)	(467)
5	**Department Labor**	**$**	**11,052**	**$ 12,857**	**$ 12,965**	**$ 13,478**	**$ 14,094**	**$ 14,618**	**$ 15,313**	**$ 15,892**	**$ 16,646**
6	Materials, Supplies & Equipment		34	11	9	31	31	32	33	33	34
7	HW/SW License & Maintenance		17	15	16	115	60	62	63	65	66
8	Outside Services		6,001	5,889	6,063	6,534	6,673	6,840	7,011	7,179	7,344
9	Utility, Maintenance & Facility		1,831	2,310	2,100	2,219	2,235	2,291	2,348	2,404	2,460
10	Employee Expenses		391	576	533	572	572	587	601	616	630
11	Insurance		2,222	2,804	2,327	2,423	2,534	2,598	2,663	2,726	2,789
12	Other Expenses		329	547	509	404	409	419	430	440	450
13	**Department Expense**	**$**	**21,876**	**$ 25,009**	**$ 24,521**	**$ 25,775**	**$ 26,609**	**$ 27,445**	**$ 28,461**	**$ 29,356**	**$ 30,419**
14	Minor Capital & Common Infrastructure		-	-	-	-	-	-	-	-	-
15	**Subtotal - Department Expenditures**	**$**	**21,876**	**$ 25,009**	**$ 24,521**	**$ 25,775**	**$ 26,609**	**$ 27,445**	**$ 28,461**	**$ 29,356**	**$ 30,419**
16											
17	**Revenues**	**$**	**-**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
18											
19	**Total Department Net Expenditures**	**$**	**21,876**	**$ 25,009**	**$ 24,521**	**$ 25,775**	**$ 26,609**	**$ 27,445**	**$ 28,461**	**$ 29,356**	**$ 30,419**

Schedule may not foot due to rounding

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Department Net Expenditures by Office

$ in Thousands

External Affairs and Corporate Communications

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$ 4,478	$ 4,875	$ 4,677	$ 5,058	$ 5,260	$ 5,471	$ 5,689	$ 5,917	$ 6,154
2	Benefits & Taxes	1,409	1,618	1,546	1,640	1,731	1,801	1,873	1,947	2,025
3	Project Funded Labor	(71)	(103)	(103)	(83)	(83)	(88)	(88)	(93)	(93)
4	Vacancy	-	(157)	-	(167)	(175)	(179)	(184)	(188)	(192)
5	**Department Labor**	**$ 5,817**	**$ 6,233**	**$ 6,121**	**$ 6,447**	**$ 6,733**	**$ 7,004**	**$ 7,290**	**$ 7,583**	**$ 7,894**
6	Materials, Supplies & Equipment	2	4	3	4	4	5	5	5	5
7	HW/SW License & Maintenance	1	39	33	5	5	5	5	5	5
8	Outside Services	-	251	250	257	257	264	270	277	283
9	Utility, Maintenance & Facility	-	-	-	-	-	-	-	-	-
10	Employee Expenses	125	218	184	179	181	186	190	195	199
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	86	103	95	149	149	153	157	161	164
13	**Department Expense**	**$ 6,031**	**$ 6,847**	**$ 6,686**	**$ 7,042**	**$ 7,330**	**$ 7,615**	**$ 7,917**	**$ 8,225**	**$ 8,550**
14	Minor Capital & Common Infrastructure	-	-	-	-	-	-	-	-	-
15	**Subtotal - Department Expenditures**	**$ 6,031**	**$ 6,847**	**$ 6,686**	**$ 7,042**	**$ 7,330**	**$ 7,615**	**$ 7,917**	**$ 8,225**	**$ 8,550**
16										
17	***Revenues**	**$ (61)**	**$ (40)**	**$ (53)**	**$ (63)**	**$ (63)**	**$ (64)**	**$ (66)**	**$ (67)**	**$ (69)**
18										
19	**Total Department Net Expenditures**	**$ 5,971**	**$ 6,807**	**$ 6,633**	**$ 6,979**	**$ 7,268**	**$ 7,551**	**$ 7,851**	**$ 8,158**	**$ 8,481**

*Market Participant Registration Fees

Schedule may not foot due to rounding.

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Item 4
ERCOT Public

Department Net Expenditures by Office

$ in Thousands

General Counsel

Line		2018 Actual		2019 Budget		2019 Forecast		2020 Request		2021 Request		2022 Projection		2023 Projection		2024 Projection		2025 Projection
1	Salaries	$	2,682	$	2,684	$	2,745	$	2,982	$	3,102	$	3,226	$	3,355	$	3,489	$	3,629
2	Benefits & Taxes		725		846		851		908		957		995		1,035		1,077		1,120
3	Project Funded Labor		127		(27)		33		-		-		-		-		-		-
4	Vacancy		-		(86)		-		(97)		(101)		(104)		(107)		(109)		(112)
5	**Department Labor**	**$**	**3,533**	**$**	**3,417**	**$**	**3,629**	**$**	**3,793**	**$**	**3,957**	**$**	**4,117**	**$**	**4,283**	**$**	**4,456**	**$**	**4,637**
6	Materials, Supplies & Equipment		2		3		3		3		4		4		4		4		4
7	HW/SW License & Maintenance		-		-		-		4		-		-		-		-		-
8	Outside Services		680		1,350		1,285		1,255		1,257		1,289		1,321		1,353		1,384
9	Utility, Maintenance & Facility		55		55		55		-		-		-		-		-		-
10	Employee Expenses		85		102		85		113		114		117		120		123		125
11	Insurance		-		-		-		-		-		-		-		-		-
12	Other Expenses		104		265		270		298		199		204		209		214		219
13	**Department Expense**	**$**	**4,459**	**$**	**5,192**	**$**	**5,326**	**$**	**5,466**	**$**	**5,531**	**$**	**5,730**	**$**	**5,937**	**$**	**6,149**	**$**	**6,368**
14	Minor Capital & Common Infrastructure		-		-		-		-		-		-		-		-		-
15	**Subtotal - Department Expenditures**	**$**	**4,459**	**$**	**5,192**	**$**	**5,326**	**$**	**5,466**	**$**	**5,531**	**$**	**5,730**	**$**	**5,937**	**$**	**6,149**	**$**	**6,368**
16																			
17	***Revenues**	**$**	**(411)**	**$**	**(268)**	**$**	**(303)**	**$**	**(268)**	**$**	**(268)**	**$**	**(275)**	**$**	**(282)**	**$**	**(289)**	**$**	**(296)**
18																			
19	**Total Department Net Expenditures**	**$**	**4,048**	**$**	**4,924**	**$**	**5,023**	**$**	**5,198**	**$**	**5,262**	**$**	**5,455**	**$**	**5,655**	**$**	**5,860**	**$**	**6,073**

*Membership Dues

Schedule may not foot due to rounding.

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Department Net Expenditures by Office

$ in Thousands

Chief Executive Office

Line		2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	$ 1,552	$ 1,581	$ 1,673	$ 1,673	$ 1,740	$ 1,810	$ 1,882	$ 1,958	$ 2,036
2	Benefits & Taxes	321	450	469	464	488	507	527	549	570
3	Project Funded Labor	-	-	(0)	-	-	-	-	-	-
4	Vacancy	-	(58)	-	(53)	(56)	(57)	(59)	(60)	(61)
5	**Department Labor**	**$ 1,873**	**$ 1,973**	**$ 2,142**	**$ 2,084**	**$ 2,172**	**$ 2,260**	**$ 2,351**	**$ 2,446**	**$ 2,545**
6	Materials, Supplies & Equipment	0	-	-	0	0	0	0	0	0
7	HW/SW License & Maintenance	-	-	-	-	-	-	-	-	-
8	Outside Services	-	-	-	-	-	-	-	-	-
9	Utility, Maintenance & Facility	-	-	-	-	-	-	-	-	-
10	Employee Expenses	65	107	84	72	72	74	76	77	79
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	15	32	27	20	20	20	21	21	22
13	**Department Expense**	**$ 1,953**	**$ 2,112**	**$ 2,252**	**$ 2,176**	**$ 2,264**	**$ 2,354**	**$ 2,448**	**$ 2,545**	**$ 2,646**
14	Minor Capital & Common Infrastructure	-	-	-	-	-	-	-	-	-
15	**Subtotal - Department Expenditures**	**$ 1,953**	**$ 2,112**	**$ 2,252**	**$ 2,176**	**$ 2,264**	**$ 2,354**	**$ 2,448**	**$ 2,545**	**$ 2,646**
16										
17	**Revenues**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
18										
19	**Total Department Net Expenditures**	**$ 1,953**	**$ 2,112**	**$ 2,252**	**$ 2,176**	**$ 2,264**	**$ 2,354**	**$ 2,448**	**$ 2,545**	**$ 2,646**

Schedule may not foot due to rounding.

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Project Expenditures

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Project Expenditures

$ in Thousands

Line	Project Expenditures	2018 Actual	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Revision Requests	$ 2,557	$ 4,000	$ 4,000	$ 4,000	$ 4,000	$ 3,000	$ 3,000	$ 3,000	$ 4,000
2	Regulatory	948	2,000	800	2,000	2,000	2,000	2,000	2,000	2,000
3	Internal Enhancements	23,060	7,500	6,900	11,250	11,000	6,000	6,000	6,000	8,000
4	Technical Foundation - Hardware Refreshes	8,027	4,000	4,200	2,250	2,250	7,250	18,750	18,850	8,250
5	Technical Foundation - Software	5,733	11,000	4,500	9,500	9,750	9,000	12,900	9,000	9,000
6	Real Time Co-optimization Project	-	-	-	3,000	5,000	12,000	10,000	10,000	-
7	**Project Expenditures**	**$ 40,324**	**$ 28,500**	**$ 20,400**	**$ 32,000**	**$ 34,000**	**$ 39,250**	**$ 52,650**	**$ 48,850**	**$ 31,250**

Schedule may not foot due to rounding

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Project Expenditures:
Project Priority List Details

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
1	Revision Requests	CMM NPRRs Phase 2 (NPRR484, NPRR867, NPRR829, NPRR907)	$500k-$1M	-
2	Revision Requests	Require ERCOT to Issue a DC Tie Curtailment Notice Prior to Curtailing any DC Tie Load (NPRR825)	$100k-$250k	-
3	Revision Requests	Creation of Direct Current Tie Operator Market Participant Role (NPRR857)	$500k-$1M	-
4	Revision Requests	Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve (NPRR863)	$500k-$1M	-
5	Revision Requests	Adjustments to Pricing and Settlement for Reliability Unit Commitments (RUCs) of On-Line Combined Cycle Generation Resources (NPRR884)	$100k-$250k	-
6	Revision Requests	Revision Request Funding - 2020/2021	$2M-$3M	$3M-$4M

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
7	Regulatory	Cyber Security Project #27	-	$500k-$1M
8	Regulatory	2021 CIP (Critical Infrastructure Protection) Enhancements	-	<$50k
9	Regulatory	Regulatory Funding - 2020/2021	$1M-$2M	$1M-$2M

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Project Expenditures:
Project Priority List Details

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
10	Internal Enhancements	ECMS (Enterprise Content Management System) Implementation Phase 2	$1M-$2M	$50k-$100k
11	Internal Enhancements	EPS (ERCOT-Polled Settlement) Metering Enhancements	<$50k	-
12	Internal Enhancements	Security Constrained Unit Commitment (SCUC)	$1M-$2M	$1M-$2M
13	Internal Enhancements	Automation of Market Participant Partnership Deletions, Mothballed Status & Seasonal Operation Period in Registration System	$100k-$250k	-
14	Internal Enhancements	Objectives and Key Results (OKR) Tool Implementation	$50k-$100k	-
15	Internal Enhancements	Network Model Impedance Parameter Estimation Enhancement	$50k-$100k	-
16	Internal Enhancements	Standard Report for Events and Near-Miss Analysis	$100k-$250k	-
17	Internal Enhancements	Outage Scheduler System Enhancements	$250k-$500k	-
18	Internal Enhancements	API (Application Programming Interface) Management Strategy	$250k-$500k	-
19	Internal Enhancements	IT Archive (ITA) - Implementation	$100k-$250k	-
20	Internal Enhancements	Reactive Power Coordination - Execution Phase	$1M-$2M	$250k-$500k
21	Internal Enhancements	Network Model CIM (Common Information Model) Upgrade	$100k-$250k	-
22	Internal Enhancements	Centralized Application Log Management (CALM) - Phase 2	$100k-$250k	-
23	Internal Enhancements	Implementation of Portfolio Management Tool(s)	$100k-$250k	$100k-$250k
24	Internal Enhancements	Replacement of Enterprise Monitoring Software	$100k-$250k	-
25	Internal Enhancements	Improve Efficiency of Managing Public Data Requests	$250k-$500k	$100k-$250k
26	Internal Enhancements	Cyber Security Project #27	$250k-$500k	-
27	Internal Enhancements	IT Application Development Operations Tool Enhancement	$500k-$1M	$500k-$1M
28	Internal Enhancements	Enterprise Architecture Framework	$100k-$250k	-
29	Internal Enhancements	Email Integration with Document Management System	$100k-$250k	-
30	Internal Enhancements	ERCOT Internal Records Management Enhancement	$100k-$250k	-

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Project Expenditures:
Project Priority List Details

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
31	Internal Enhancements	Market Rules Automation of Business Processes	<$50k	$100k-$250k
32	Internal Enhancements	Database Activity Monitoring Expansion	$100k-$250k	$100k-$250k
33	Internal Enhancements	Intra-Hour Variability Monitoring Tool	$100k-$250k	-
34	Internal Enhancements	On-Site Physical Storage - Taylor Location	$100k-$250k	$100k-$250k
35	Internal Enhancements	Repurpose Blue Building	$250k-$500k	$250k-$500k
36	Internal Enhancements	Data Analysis Architecture Enhancement	<$50k	-
37	Internal Enhancements	Control Room Macomber Map Replacement	$100k-$250k	$100k-$250k
38	Internal Enhancements	Privileged Account Management - Phase 3	$100k-$250k	$100k-$250k
39	Internal Enhancements	Test Data and Environment Enhancement - Implementation	-	$250k-$500k
40	Internal Enhancements	Automate Verifiable Cost Data Gathering	-	$500k-$1M
41	Internal Enhancements	Changing Grid Enhancements	$500k-$1M	$1M-$2M
42	Internal Enhancements	Capital Efficiencies and Enhancements - 2020/2021	$500k-$1M	$500k-$1M
43	Internal Enhancements	Efficiency/Enhancement Projects Funding - 2020/2021	$1M-$2M	$1M-$2M

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